ORDER NO. ARD83060256C9-19

Service Manual

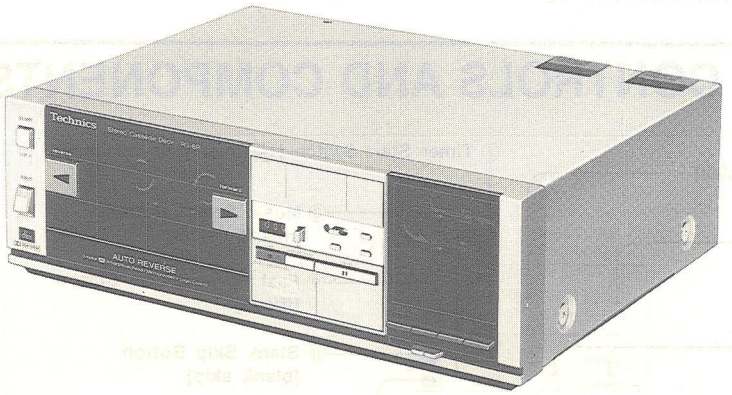
Cassette Deck

315 Series Mini-Size Auto Reverse Cassette Deck with dbx System

RS-8R

(Silver Face)
(Black Face)

DOLBY SYSTEM



This is the Service Manual for the following areas.
- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.
- [F] ..... For Asian PX.
- [J] ..... For European PX.

RS-8R in black is also available in some countries.

RS-8R MECHANISM SERIES

Specifications

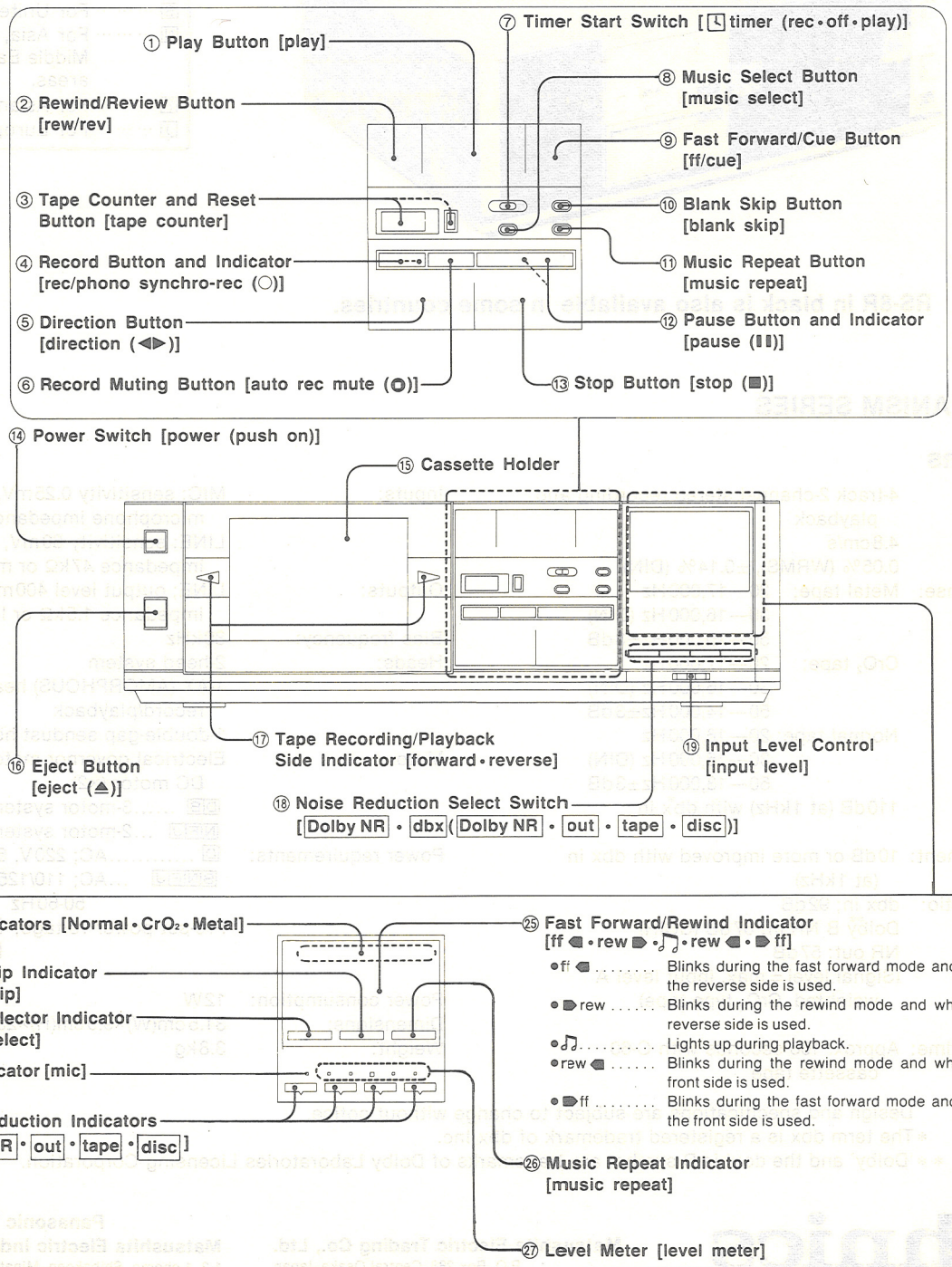
Track system:	4-track 2-channel stereo recording and playback		
Tape speed:	4.8cm/s		
Wow and flutter:	0.05% (WRMS), ±0.14% (DIN)		
Frequency response:	Metal tape;	20—17,000Hz 30—16,000Hz (DIN) 50—15,000Hz±3dB	
	CrO_2 tape;	20—17,000Hz 30—16,000Hz (DIN) 50—14,000Hz±3dB	
	Normal tape;	20—16,000Hz 30—15,000Hz (DIN) 50—13,000Hz±3dB	
Dynamic range:	110dB (at 1kHz) with dbx* in		
Max. input level improvement:	10dB or more improved with dbx in (at 1kHz)		
Signal-to-noise ratio:	dbx in; 92dB Dolby** B NR in; 67dB (CCIR) NR out; 57dB (Signal level = max. input level A weighted, CrO_2 type tape)		
Fast forward and rewind time:	Approx. 100 seconds with C-60 cassette tape		
Inputs:	MIC; sensitivity 0.25mV, applicable microphone impedance 400Ω—10kΩ LINE; sensitivity 60mV, input impedance 47kΩ or more		
Outputs:	LINE; output level 400mV, output impedance 1.5kΩ or less		
Bias frequency:	80kHz		
Heads:	2-head system 1-AX (AMORPHOUS) head for record/playback 1-double-gap sendust head for erasure		
Motor:	Electrical governor motor (×1), DC motor (×2) [DB] .....3-motor system [NFJ] ...2-motor system		
Power requirements:	[D] .....AC; 220V, 50-60Hz [BNFJ] ...AC; 110/125/220/240V, 50-60Hz Pre-set power voltage; [BN] ...; 240V [F] .....; 125V [J] .....; 220V		
Power consumption:	12W		
Dimensions:	31.5cm(W)×9.9cm(H)×23.9cm(D)		
Weight:	3.8kg		

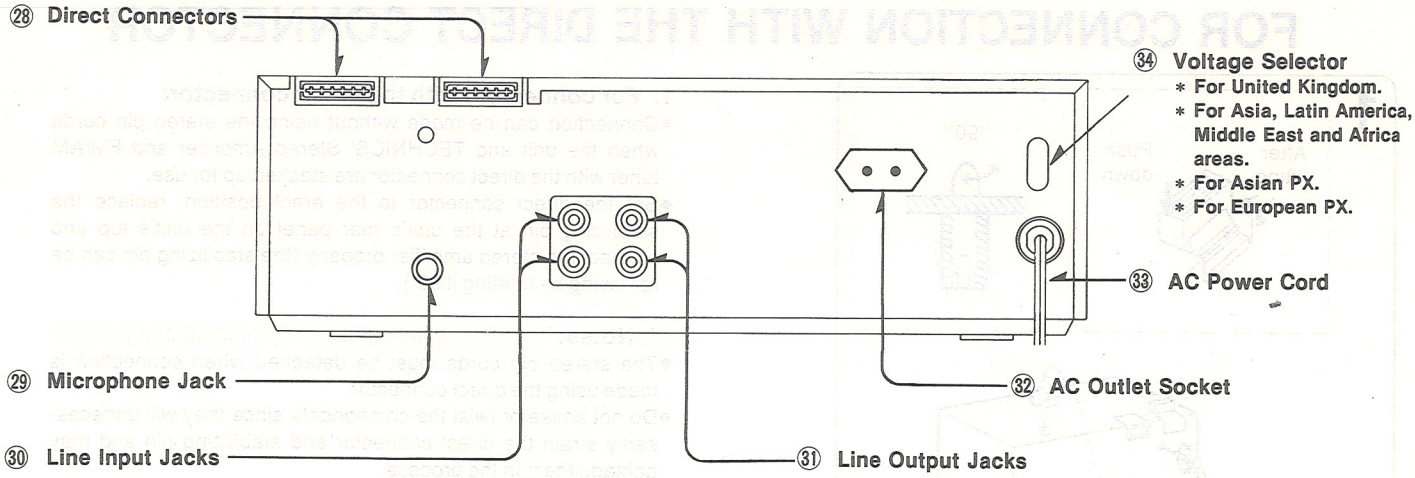
Design and specifications are subject to change without notice.
*The term dbx is a registered trademark of dbx Inc.
**'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Technics

CONTENTS

LOCATION OF CONTROLS AND COMPONENTS





OPERATING INSTRUCTION

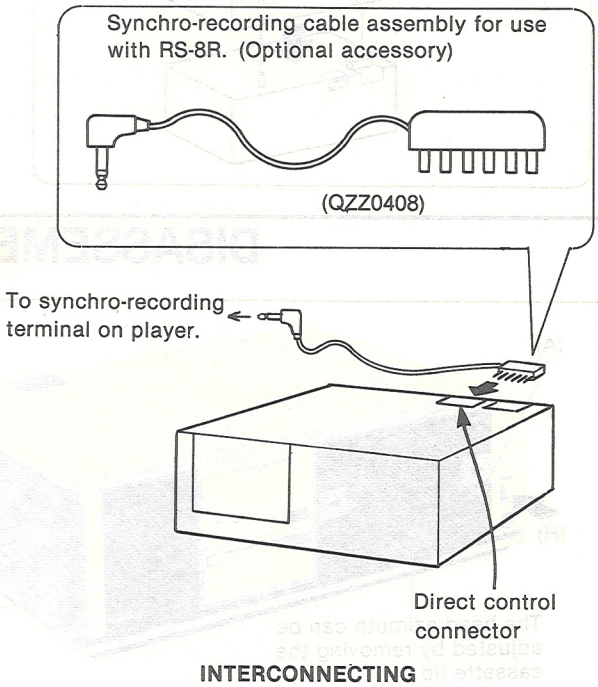
1. About Synchro-recording

Why use synchro-recording?

When the tape deck's Record Button is pushed, and the deck placed in the record-pause condition, when the stylus of the tonearm is lowered onto the record surface, the Pause mode will be automatically released and recoridng will begin. When the stylus leaves the surface of the record, approximately four seconds of non-recorded interval will be allowed to pass before the recording stops automatically. This function is called synchro-recording.

NOTE:

For synchro-recording with a system provided with no direct control connector, an optional synchro-recording cable assembly, QZZ0408, is required.



INTERCONNECTING

2. The Reverse Function

The front side (visible side) or the reverse side can be played back without having to turn the cassette tape around.

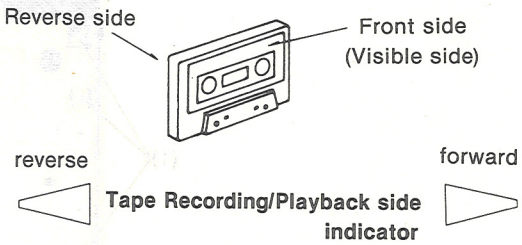
Repeat automatic reverse

When the tape has wound to the hub during playback, the repeat automatic reverse mechanism operates and the tape playback side is automatically changed.

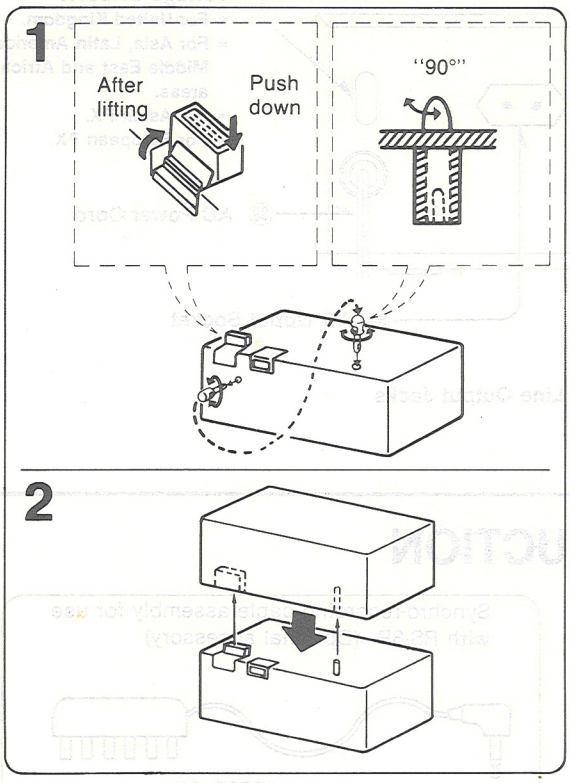
Until the Stop Button is pressed, the front side changes to the reverse side, the reverse side to the front side. The operation is repeated 8 times and then automatically stops.

Manual reverse

The cassette tape playback side can be changed freely using the Direction Button.



FOR CONNECTION WITH THE DIRECT CONNECTOR



1. For connection with the direct connector:

- Connection can be made without using the stereo pin cords when the unit and TECHNICS' Stereo Amplifier and FM/AM tuner with the direct connector are stacked up for use.
- Set the direct connector to the erect position, replace the stabilizing pin at the unit's rear panel on the unit's top and connect the stereo amplifier properly (the stabilizing pin can be removing by rotating it 90°).

Notes:

- The stereo pin cords must be detached when connection is made using the direct connector.
- Do not shake or twist the components since they will unnecessarily strain the direct connector and stabilizing pin and may damage them in the process.

DISASSEMBLY INSTRUCTIONS

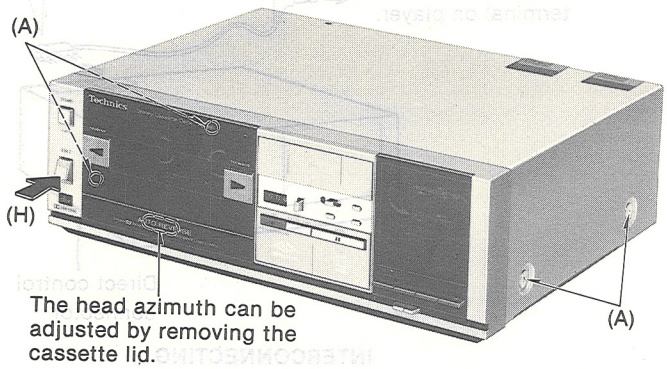


Fig. 1

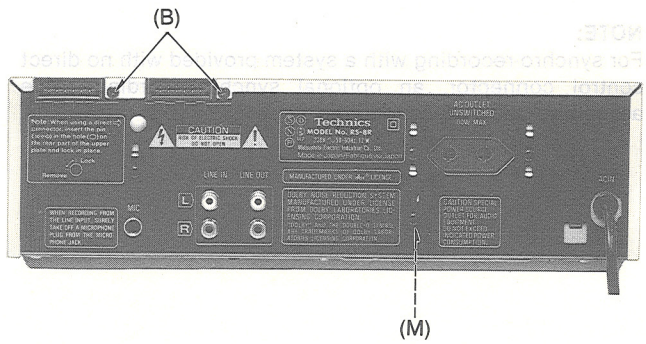


Fig. 2

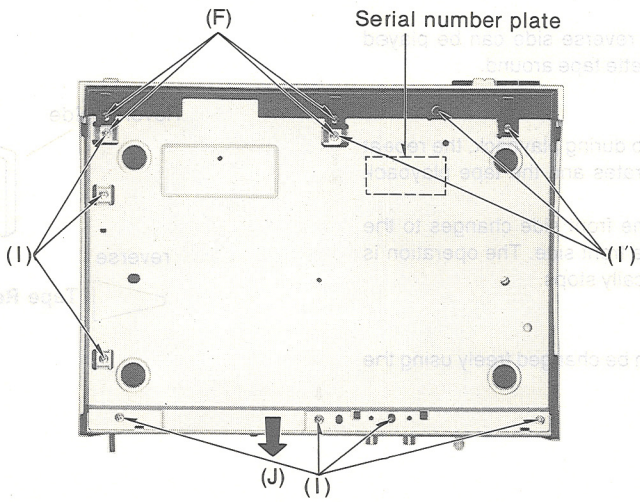
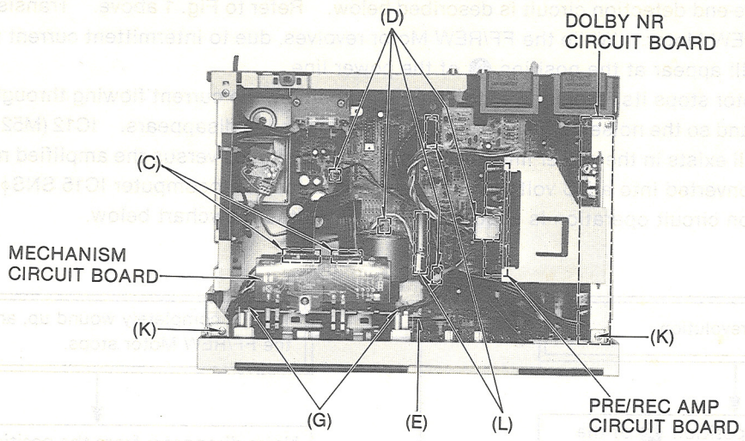
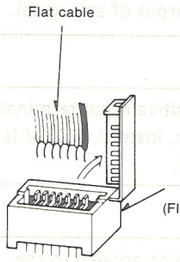


Fig. 3

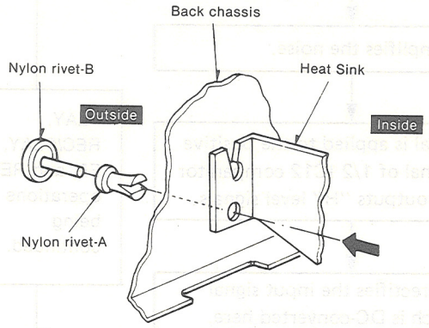


(C), (L) How to remove flat cable



Open the lid of connector in the direction of the arrow as shown above, and extract the flat cable to disconnect.

(M) How to remove nylon rivet



To remove a heat sink from the back chassis, first press nylon rivet-A from the inside in the direction indicated by the arrow as shown above, and extract the rivet to the outside. Next remove nylon rivet-B from the outside. Consequently, the heat sink can be removed from the back chassis.

Fig. 4

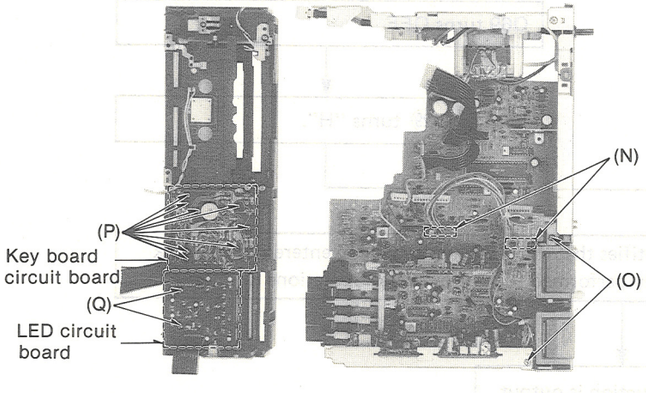


Fig. 5

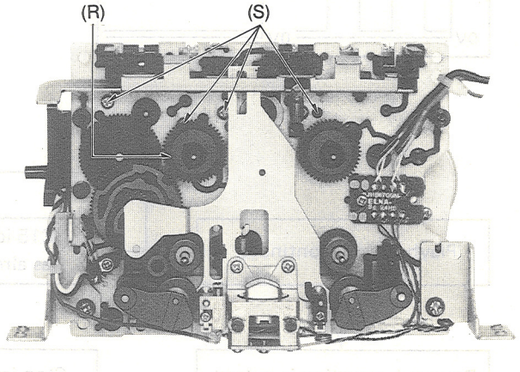


Fig. 6

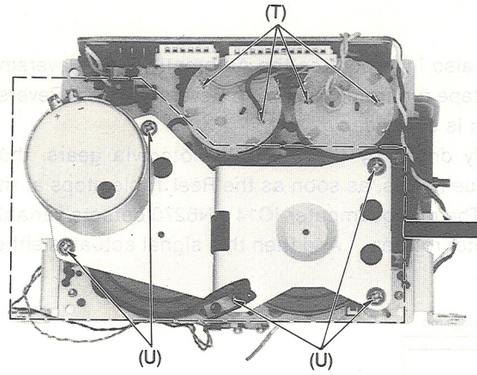


Fig. 7

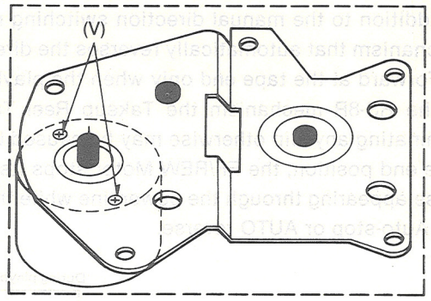


Fig. 8

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	• 4 screws .....(A) • 2 screws .....(B)	1 2
2	1 → 2	Mechanism unit	• How to remove flat cable .....(C) • Pull the connector .....(D) • Remove the counter belt .....(E) • 4 screws .....(F) • 2 screws .....(G) • Push the eject button .....(H)	4 4 4 3 4 1
3	3	Bottom cover assembly	• 10 screws .....(I)(I′) • Slide the bottom cover assembly in the direction of arrow (J) and remove it.	3 3
4	1 → 2 → 4	Front panel assembly	• 3 screws .....(I′) • 2 screws .....(K) • How to remove flat cable .....(L)	3 4 4
5	1 → 2 → 3 → 4	Main circuit board, DOLBY NR circuit board and Pre/ Rec AMP circuit board	• How to remove nylon rivet.....(M) • Pull the connector .....(N) • 2 screws .....(O)	2, 4 5 5
6	1 → 2 → 4 → 6	Key board circuit board	• 8 screws .....(P)	5
7	1 → 2 → 4 → 7	LED circuit board	• 2 screws .....(Q)	5
8	1 → 2 → 8	FF/REW motor and Driver motor	• Remove the reel table .....(R) • 4 screws .....(S) • Unsolder the soldered portion of the FF/REW motor terminal and driver motor terminal .....(T)	6 6 7
9	1 → 2 → 8	Capstan motor	• 5 screws .....(U) • 2 screws .....(V)	7 8

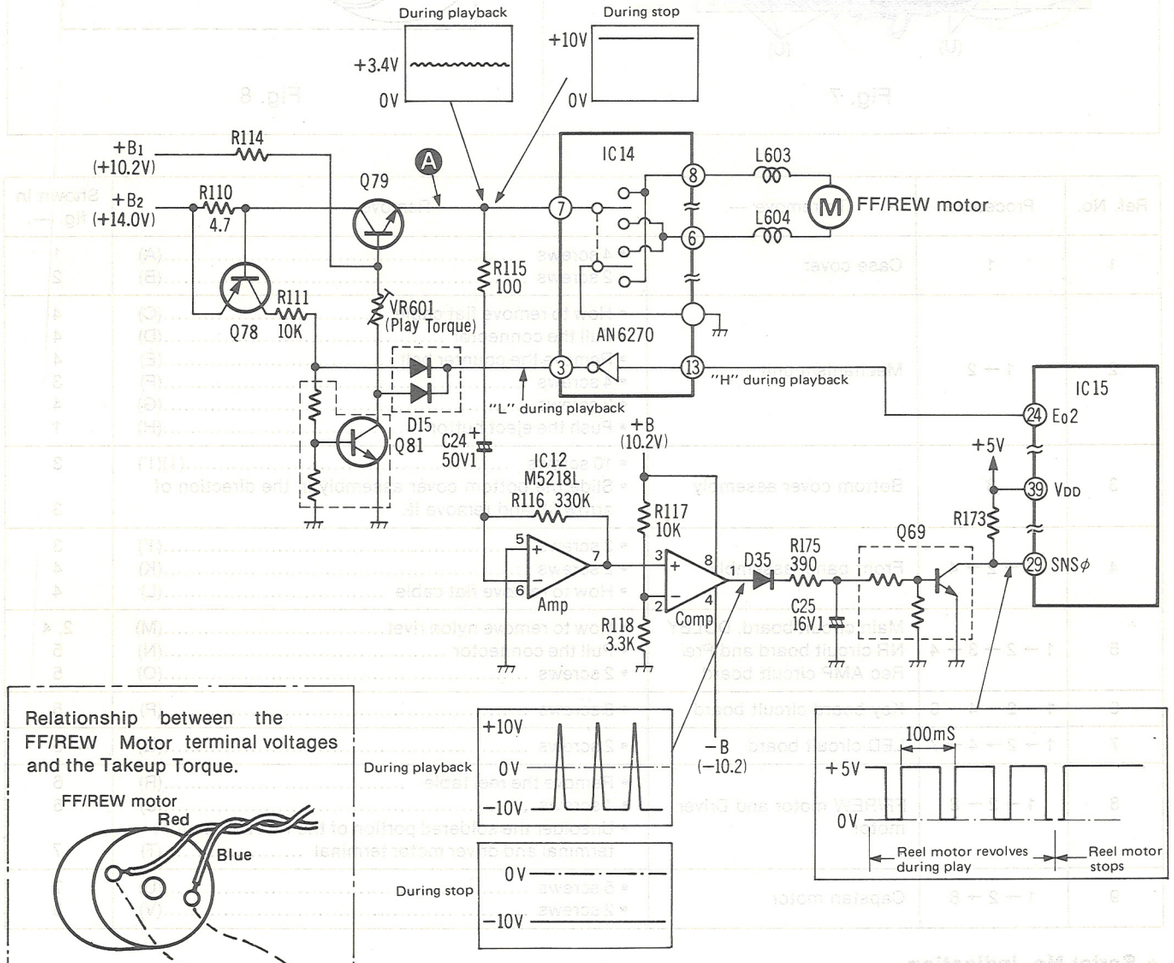
* Serial No. Indication.

The serial number plate of this product is attached to the bottom cover (shown in Fig. 3).

TECHNICAL EXPLANATION

Tape End Detection Mechanism

In addition to the manual direction switching means, RS-8R also incorporates the Automatic Tape Reversing mechanism that automatically reverses the directions of the tape run from Forward to Reverse or from Reverse to Forward at the tape end only when the playback operation is entered.
In the RS-8R mechanism the Takeup Reel Table is directly driven by the FF/REW Motor via gears, thus eliminating any slip otherwise may be caused by friction. Due to this, as soon as the Reel Table stops at the tape end position, the FF/REW Motor stops its revolution. The microcomputer IC14 AN6270 detects variable noise appearing through the power line while the FF/REW Motor rotates. And then this signal actuates either the Auto-stop or AUTO reverse.



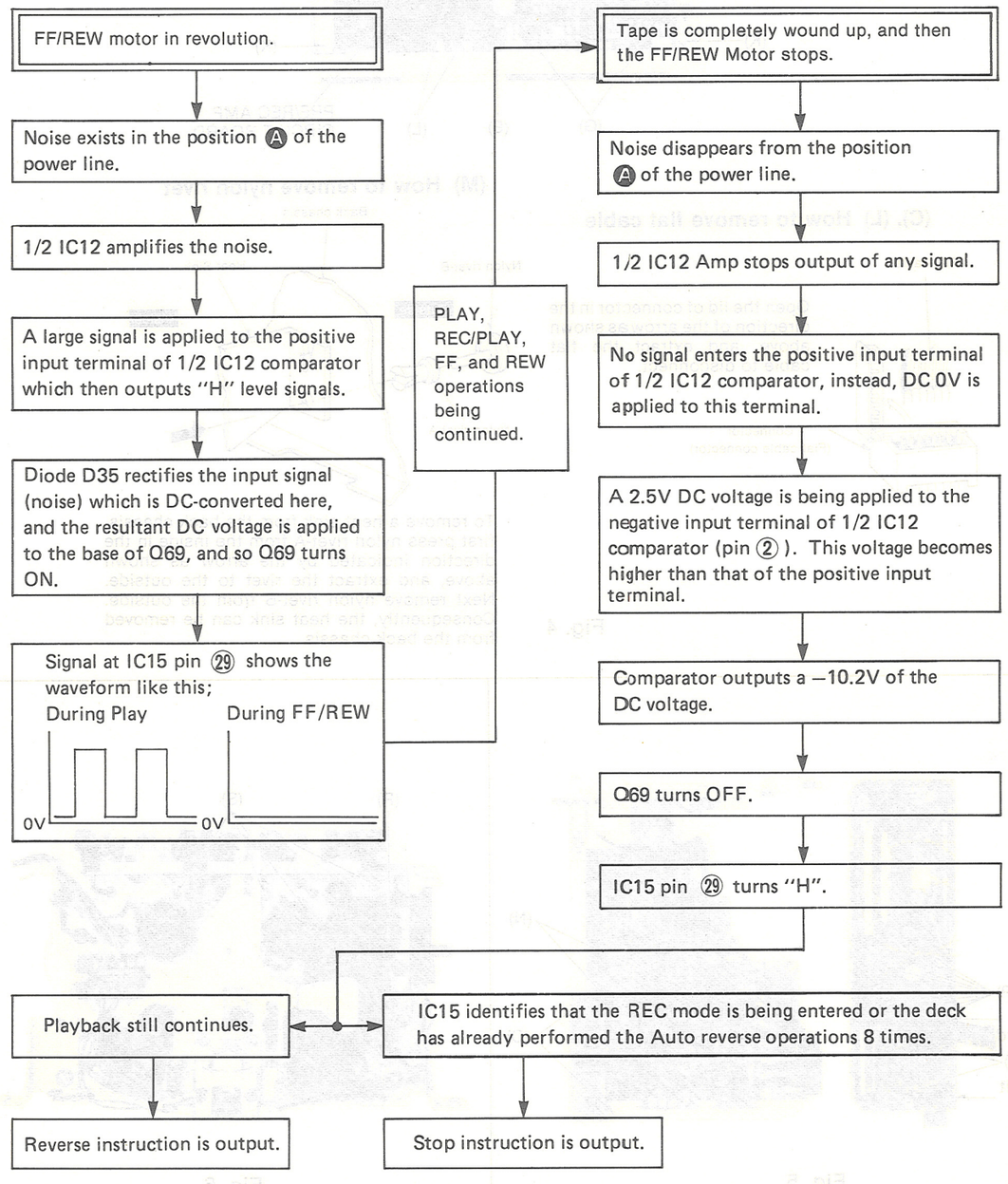
Relationship between the FF/REW Motor terminal voltages and the Takeup Torque.

Operation mode	Voltage	Voltage	Takeup torque
Forward Playback	0.2V	3.7V	50g • cm
Forward FF	0V	9.4V	150g • cm
Reverse Playback	3.7V	0.2V	50g • cm
Reverse FF	9.4V	0V	150g • cm

Note: Each terminal voltage value represents the voltage between terminal and the ground.

Fig. 1 The tape-end detection circuit

Operations of the Tape-end detection circuit is described below. Refer to Fig. 1 above. Transistor Q79 feeds the power to the FF/REW Motor. While the FF/REW Motor revolves, due to intermittent current flowing to the amateur coil, noise will appear at the position Ⓐ of the power line.
When the FF/REW Motor stops its revolution at the tape end position, the current flowing through the amateur coil becomes stable, and so the noise at the position Ⓐ of the power line disappears. IC12 (M5218L) amplifies such noise while it still exists in the power line, then compares the signals versus the amplified noise, which is then rectified to be converted into a DC voltage and then sent to the microcomputer IC15 SNSφ pin ㉙.
The Tape-end detection circuit operation is sequentially shown in the Flowchart below.



REPLACING ROTARY HEAD ASSEMBLY

Considerations in mounting the rotary head assembly

1. This recorder requires a record/playback head of extremely precise head height. In replacing the rotary head, install a factory-adjusted full rotary head assembly.
   [Never attempt to disassemble the rotary head assembly by removing screws (A).]
2. In installing the replacement rotary head assembly, make certain that the change gear is placed at location (B) on the change rod. (See Fig. 1.)
3. Trace the record/playback head lead-wire as follows (Refer to Fig. 2.):
   - Set the record/playback head in its forward playback direction.
   - Pass the head lead-wire through the lug (C) on the pressure roller arm (R) assembly.
   - Slacken the wire between the head assembly and the lug (C) (by making a 5 or 6mm turnup near the lug (C)).

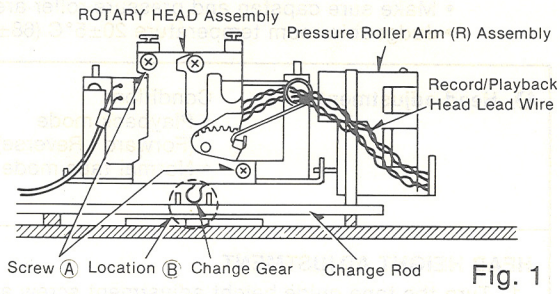


Fig. 1

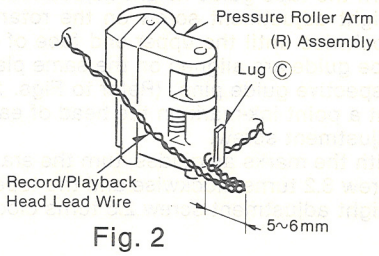


Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

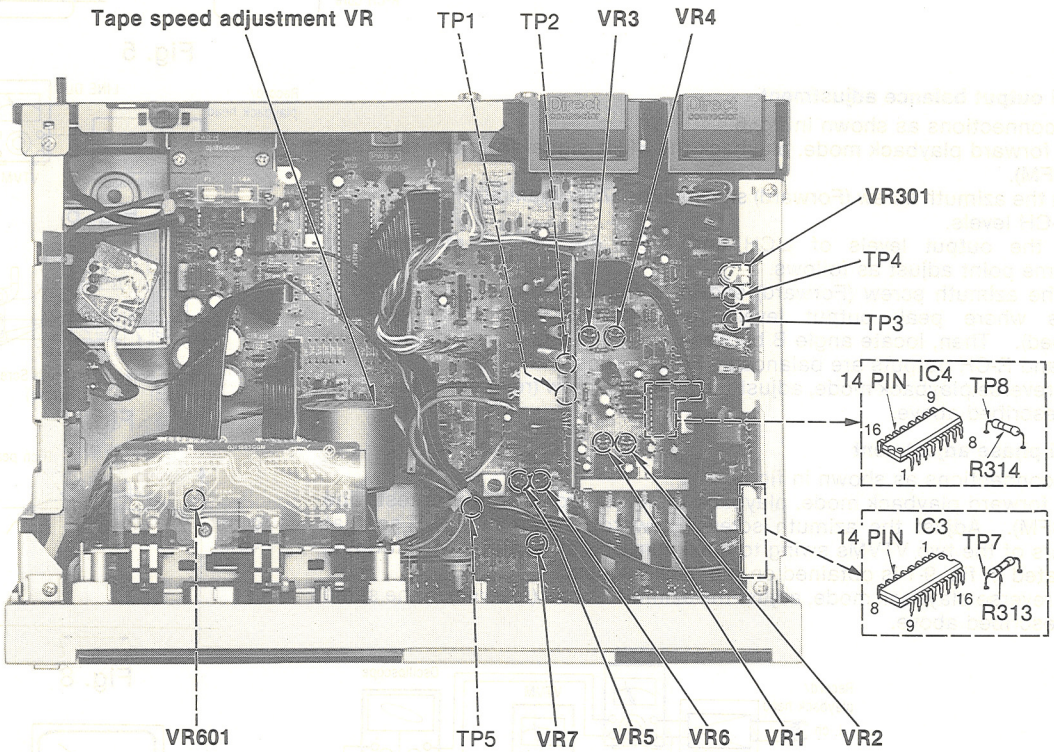


Fig. 1

NOTES: Set switches and controls in the following positions, unless otherwise specified.
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20±5°C (68±9°F)
- NR switch: OUT
- Timer start switch: OFF
- Input level control: Maximum

Ⓐ Head adjustment

Condition:
- Playback mode (Forward • Reverse)
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape (azimuth)...QZZCFM
- Test tape .....QZZCRD

HEAD HEIGHT ADJUSTMENT

1. Turn the tape guide height adjustment screw and the erase head height adjustment screw on the rotary head assembly counter-clockwise until the upper end face of the erase head and of the tape guide are aligned on the same plane as the top face of their respective guide pins. (Refer to Figs. 2, 3 and 4).
2. Put a point ink-mark on the head of each adjustment screw.

3. With the marks as guides, turn the erase head height adjustment screw 3.2 turns clockwise and the tape guide height adjustment screw 2.5 turns clockwise.

4. Install a test tape (tape with mirror: QZZCRD) on the recorder; place the recorder in the FORWARD PLAY mode.
   Make fine adjustments of the erase head height and tape guide height adjustment screws as necessary, to attain on the recording/reproducing head face the tape position shown in Fig. 5.
5. Run the tape in the forward play mode and check it for zigzag running. (Shown in Fig. 5)
   If zigzag tape running occurs, repeat step 4.
6. Place the recorder in the reverse play mode and perform the above steps 4 and 5.
7. Repeat steps 5 and 6 two or three times and verify that the tape position shown in Fig. 5 is ensured.

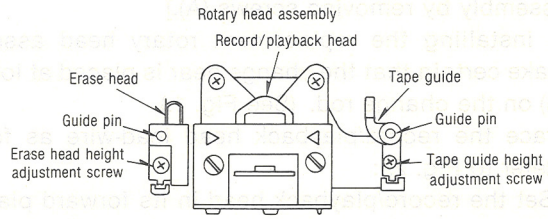


Fig. 2

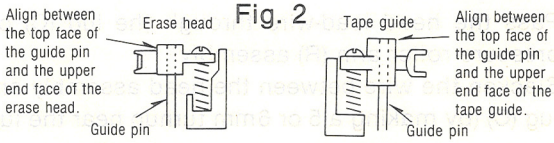


Fig. 3 Fig. 4

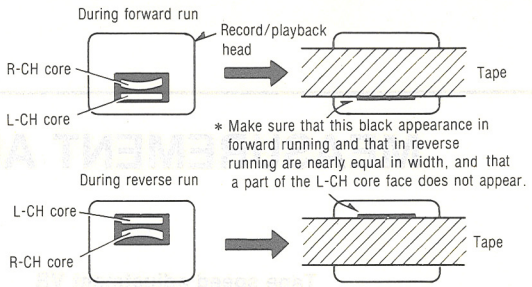


Fig. 5

L-CH/R-CH output balance adjustment

8. Make connections as shown in fig. 6.
9. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM).
   Adjust the azimuth screw (Forward) shown in fig. 7 for maximum output L-CH and R-CH levels.
   When the output levels of L-CH and R-CH are not at maximum at the same point adjust as follows.
10. Turn the azimuth screw (Forward) shown in fig. 7 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate angle B between angles A and C, i.e., point where L-CH and R-CH outputs are balanced. (Refer to figs. 7 and 8.)
11. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

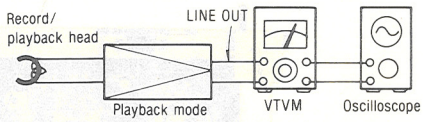


Fig. 6

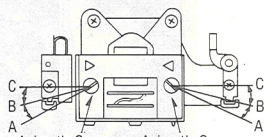


Fig. 7

L-CH/R-CH phase adjustment

12. Make connections as shown in fig. 9.
13. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM). Adjust the azimuth screw (Forward) shown in fig. 7 so that pointers of the two VTVMs swing to maximum and a lissajous waveform as illustrated in fig. 9-1 is obtained on the oscilloscope.
14. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

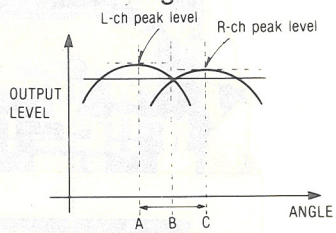


Fig. 8

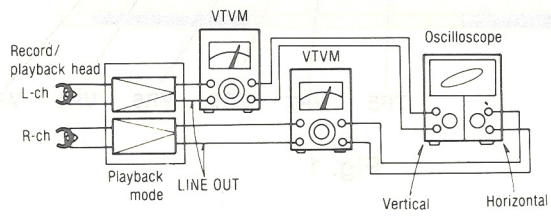


Fig. 9

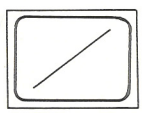


Fig. 9-1

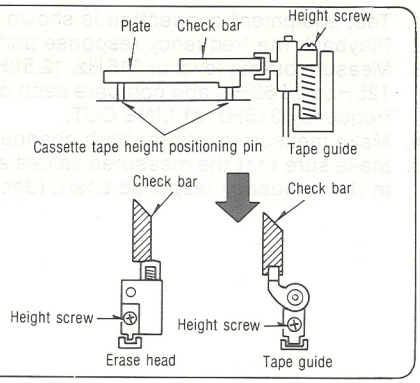
Checking the difference in level between forward and reverse running

15. Reproduce the playback level adjustment signal (315Hz at 0dB) on the standard playback adjustment tape, and check that the difference between the level in forward running and that in reverse running is within 1.0dB.
16. After adjustment, lock the erase head height, tape guide height and angle adjustment screws.

Head Height Adjustment using the Head Adjustment Jig (QZZ0207)

The head adjustment jig (QZZ0207) enables accurate, speedy head height adjustment in the following manner.

a. Place the plate onto the mechanism.
b. Set the mechanism to the PLAY mode.
c. Place the check bar onto the plate.
d. Pass the check bar through each tape guide.
e. Adjust the height screw so that the check bar does not touch any of the tape guides.
f. Run a mirror tape (QZZCRD) and check to see that the tape does not touch (twist arround, etc.) the tape guide.
g. After that, adjust items 4 thru 13 in the adjustment procedure.



Ⓑ Takeup torque

Condition:
- Playback mode

Equipment:
- DC voltmeter
- Test tape...QZZSRKCT

1. Adjust the takeup torque adjusting potentiometer VR601 in the forward playback mode for 3.5 volts between the FF/REW motor terminals.
2. Run the QZZSRKCT takeup torque measurement tape in the forward playback mode and check that the torque is within quoted tolerances.

Standard value: 50±10gr-cm

Ⓒ Tape speed

Condition:
- Playback mode

Equipment:
- Digital frequency counter
- Test tape...QZZCWAT

Tape speed accuracy

1. Test equipment connection is shown in fig. 10.
2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to the digital frequency counter.
3. Measure this frequency.
4. On the basis of 3,000Hz, determine value by following formula:

$$\text{Tape speed accuracy} = \frac{f-3{,}000}{3{,}000} \times 100(\%)$$ where, f = measured value

5. Take measurement at middle section of tape.

Standard value: ±1.5%

6. If measured value is not within the standard value, adjust it by using the tape speed adjustment VR shown in Fig. 1.

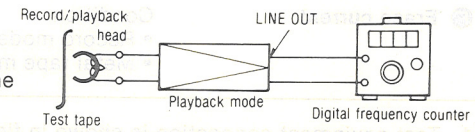


Fig. 10

Tape speed fluctuation

Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:

$$\text{Tape speed fluctuation} = \frac{f_1-f_2}{3{,}000} \times 100(\%)$$ f_1 = maximum value, f_2 = minimum value

Standard value: Less than 1%

NOTE:
Please use non metal type screwdriver when you adjust tape speed on this unit.

Ⓓ Playback frequency response

Condition:
- Playback mode (Forward • Reverse)
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 5.
2. Playback the frequency response portion of test tape (QZZCFM).
3. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.
4. Make measurements for both channels.
5. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 11).

Playback frequency response (Forward • Reverse)

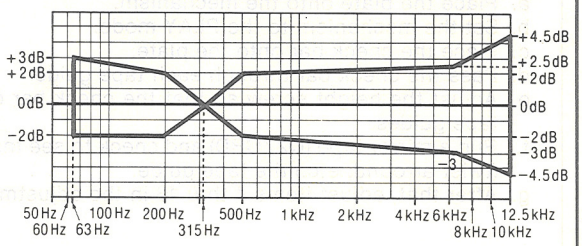


Fig. 11

Ⓔ Playback gain

Condition:
- Playback mode
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 6.
2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP7 (L-CH), TP8 (R-CH)].
3. Make measurements for both channels.

Standard value: 0.4±0.02V [around 0.42V: at test points TP7 (L-CH) and TP8 (R-CH)]

Adjustment
1. If the measured value is not within standard the adjust VR1 (L-CH) or VR2 (R-CH) (See fig. 1).
2. After adjustment, check "Playback frequency response" again.

Ⓕ Erase current

Condition:
- Record mode
- Metal tape mode

Equipment:
- VTVM
- Oscilloscope

1. Test equipment connection is shown in fig. 12.
2. Place UNIT into metal tape mode.
3. Press the record and pause buttons.
4. Read voltage on VTVM and calculate erase current by following formula:

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R20}}{1\ (\Omega)}$$

Standard value: 155±15mA (Metal)

5. If the measured value is not within standard value, adjust VR7 (shown in fig. 1).

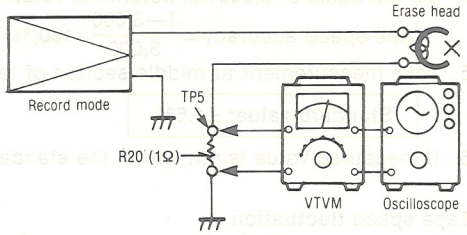


Fig. 12

Ⓖ Overall frequency response

Condition:
- Record/playback mode
- Normal tape mode
- CrO_2 tape mode
- Metal tape mode
- Input level control...MAX

Equipment:
- VTVM
- ATT
- AF oscillator
- Oscilloscope
- Resistor (600Ω)
- Test tape (reference blank tape)
  ...QZZCRA for Normal
  ...QZZCRX for CrO_2
  ...QZZCRZ for Metal

Note:
Before measuring and adjusting, the overall frequency response make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

(Recording equalizer is fixed)

1. Make connections as shown in fig. 13.
2. Place UNIT into normal tape mode and insert the normal reference blank test tape (QZZCRA).
3. Supply a 1kHz signal from the AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is −20dB below standard recording level (standard recording level = 0 VU).
5. Adjust the AF oscillator frequency to 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 14).
   (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)
   If the curve is not within the charted specifications, adjust as follows;

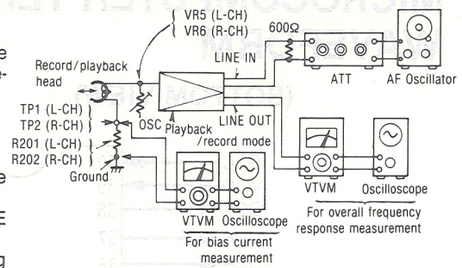


Fig. 13

Overall frequency response chart (Normal)

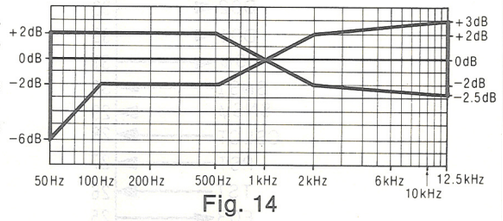


Fig. 14

Adjustment (A):
When the curve exceeds the overall specified frequency response chart (fig. 14) as shown in fig. 15.

1) Increase bias current by turning VR5 (L-CH) and VR6 (R-CH).
   (See fig. 1 on page 9.)
2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 14.)
3) If the curve still exceeds the specifications (fig. 14), increase bias current further and repeat steps 5 and 6.

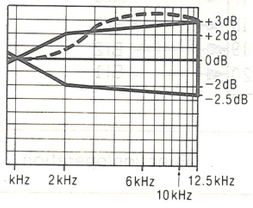


Fig. 15

Adjustment (B):
When the curve falls below the overall specified frequency response chart (fig. 14) as shown in fig. 16.

1) Reduce bias current by turning VR5 (L-CH) and VR6 (R-CH).
2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 14.)
3) If the curve still falls below the charted specifications (fig. 14), reduce bias current further and repeat steps 5 and 6.

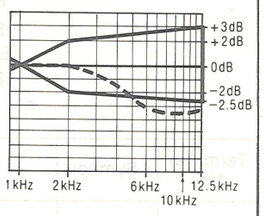


Fig. 16

7. Place UNIT into CrO_2 tape mode.
8. Change test tape to CrO_2 reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart or CrO_2 tapes (fig. 17).
9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 12.5kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 17).
10. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.
    • Read voltage on VTVM between ground and test point (TP1 for L-CH, TP2 for R-CH) and calculate bias current by following formula:

$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$$

Standard value:
around 200μA (Normal position)
around 300μA (CrO_2 position)
around 400μA (Metal position)

Overall frequency response chart (CrO_2, Metal)

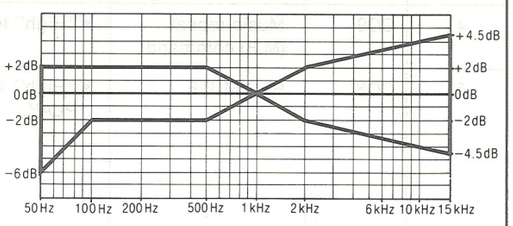


Fig. 17

Overall gain

Condition:
- Record/playback mode
- Normal tape mode
- Input level controls...MAX
- Standard input level;
  MIC .....−72±4dB
  LINE IN .....−24±4dB

Equipment:
- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)
- Test tape
  (reference blank tape)
  ...QZZCRA for Normal

1. Test equipment connection is shown in fig. 18.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (−24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes 0.38V.
6. Playback recorded tape, and make sure that the output level at LINE OUT becomes 0.38V.
7. If measured value is not 0.4V±2dB, adjust it by using VR3 (L-CH) or VR4 (R-CH).
8. Repeat from step (2).

Standard value: 0.4V±2dB
[around 0.42V: at test points TP7 (L-CH) and TP8 (R-CH)]

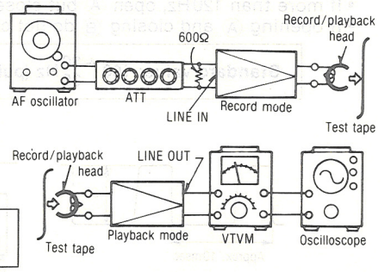


Fig. 18

Dolby NR circuit

Condition:
- Record mode
- Dolby NR switch...IN/OUT
- Input level control...MAX

Equipment:
- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)

1. Make connections as shown in fig. 19.
2. Set the unit to the record mode. (NR select switch is OUT.)
3. Apply a 1kHz signal to LINE IN.
4. Adjust the ATT so that the output level at TP7 (L-CH) and TP8 (R-CH) is 17.5mV.
5. The output level at pin 14 should be 0dB.
6. Set the NR select switch to IN, and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is +6dB±1.5dB.
7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 14 should be 0dB.
8. Set the NR select switch to IN and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is +8dB±1.5dB.

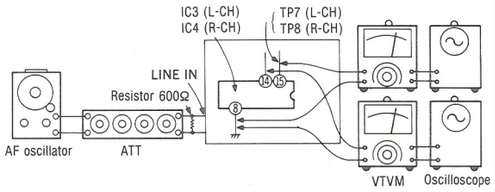


Fig. 19

Attack recovery time adjustment (dbx circuit)

Condition:
- Record mode
- Input level control...MAX
- Noise reduction selector ...dbx tape

Equipment:
- VTVM
- ATT
- AF oscillator
- DC voltmeter

1. Make the connections as shown in fig. 20 and apply 1kHz −27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode, adjust ATT so that the signal level at C361 (L-CH) and C362 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

Reference value: 15±0.5mV

4. If measured value is not within reference, adjust VR301 (shown in fig. 1).

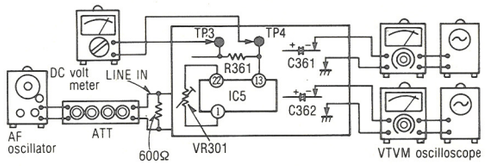


Fig. 20

Ⓚ Input scanning time adjustment

Condition:
- Stop mode

Equipment:
- Oscilloscope

1. Place the recorder in the stop mode.
2. Connect an oscilloscope to pin 31 of IC15, as shown in Fig. 21.
3. If the measured value is not within standard value, correct it by opening or closing the jumper junctions Ⓐ and Ⓑ as follows (See Fig. 22):
   After closing Ⓐ and opening Ⓑ, read the resulting value.
   - If it is less than 70Hz, close Ⓑ.
   - If more than 120Hz, open Ⓐ but close Ⓑ.
   - If opening Ⓐ and closing Ⓑ do not cause the reading to be less than 120Hz, open both Ⓐ and Ⓑ.

Standard value: 100^{+20}_{-30} Hz (pulse frequency)

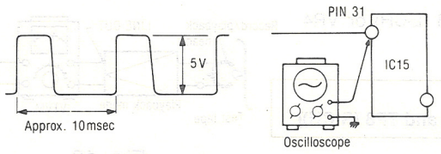


Fig. 21

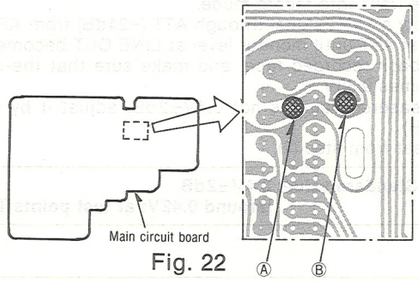


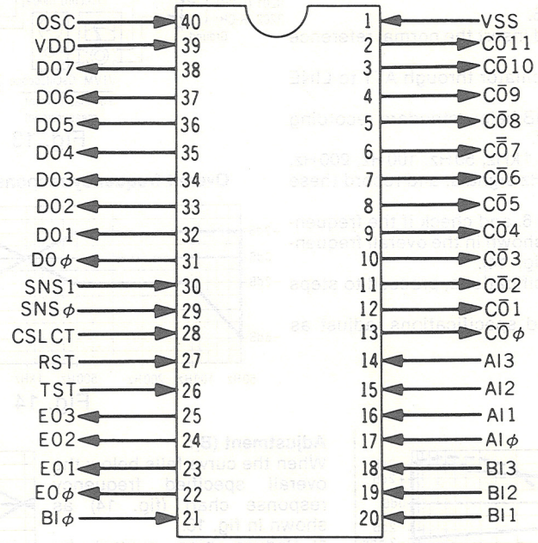
Fig. 22

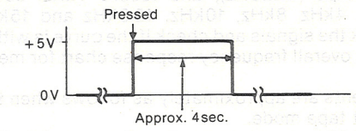
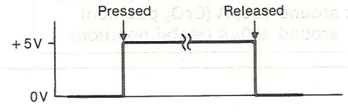
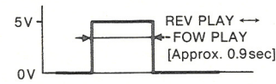
Ⓛ Level meter

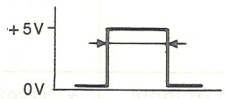
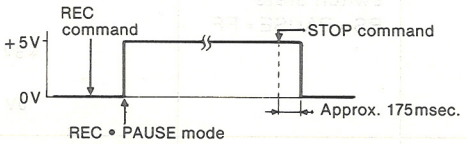
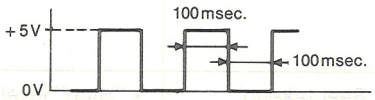
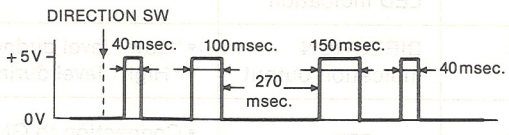
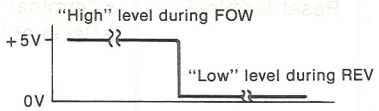
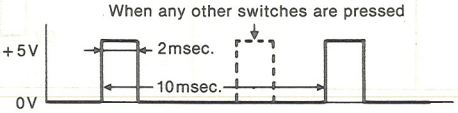
Check that the LEVEL meter LED "0" is lit when 0.4V ± 1.5dB output appears at the LINE OUT terminal.

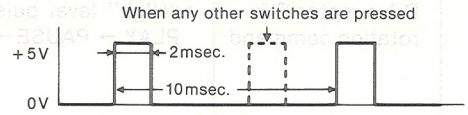
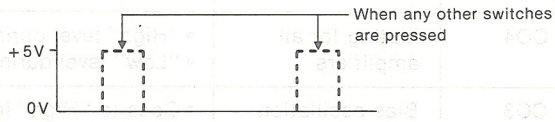
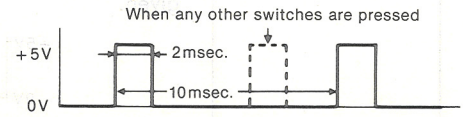
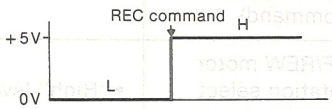
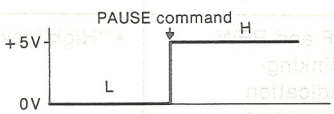
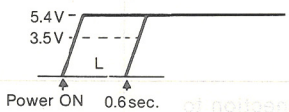
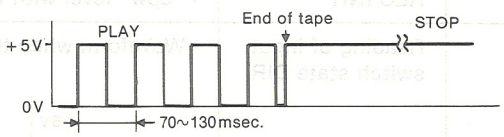
MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM

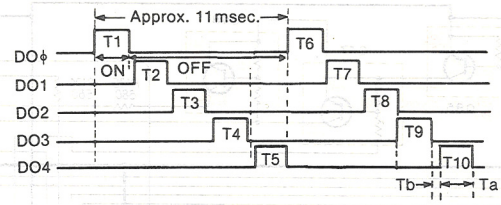
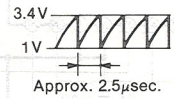
(BOTTOM VIEW)



Terminal No.	Symbol	Name	Function/operation
1.	VSS	GND	
2.	CO11	Music select (M.S) command	• "High" level with music select at ON.
3.	CO10	Blank skip (B.S) command	• "High" level with blank skip at ON.
4.	CO9	Music repeat (M.R) command	• "High" level with music repeat at ON.
5.	CO8	REC MUTE	• "High" level pulse with REC MUTE button pressed during REC PLAY. 
6.	CO7	CUE/REVIEW MUTE	• "High" level pulse with CUE/REVIEW button pressed during PLAY. 
7.	CO6	Drive motor CCW rotation command	• "High" level pulse in each mode in operational sequence REV PLAY → PAUSE → STOP → FOW PLAY. • During switching between REV PLAY and FOW PLAY. 

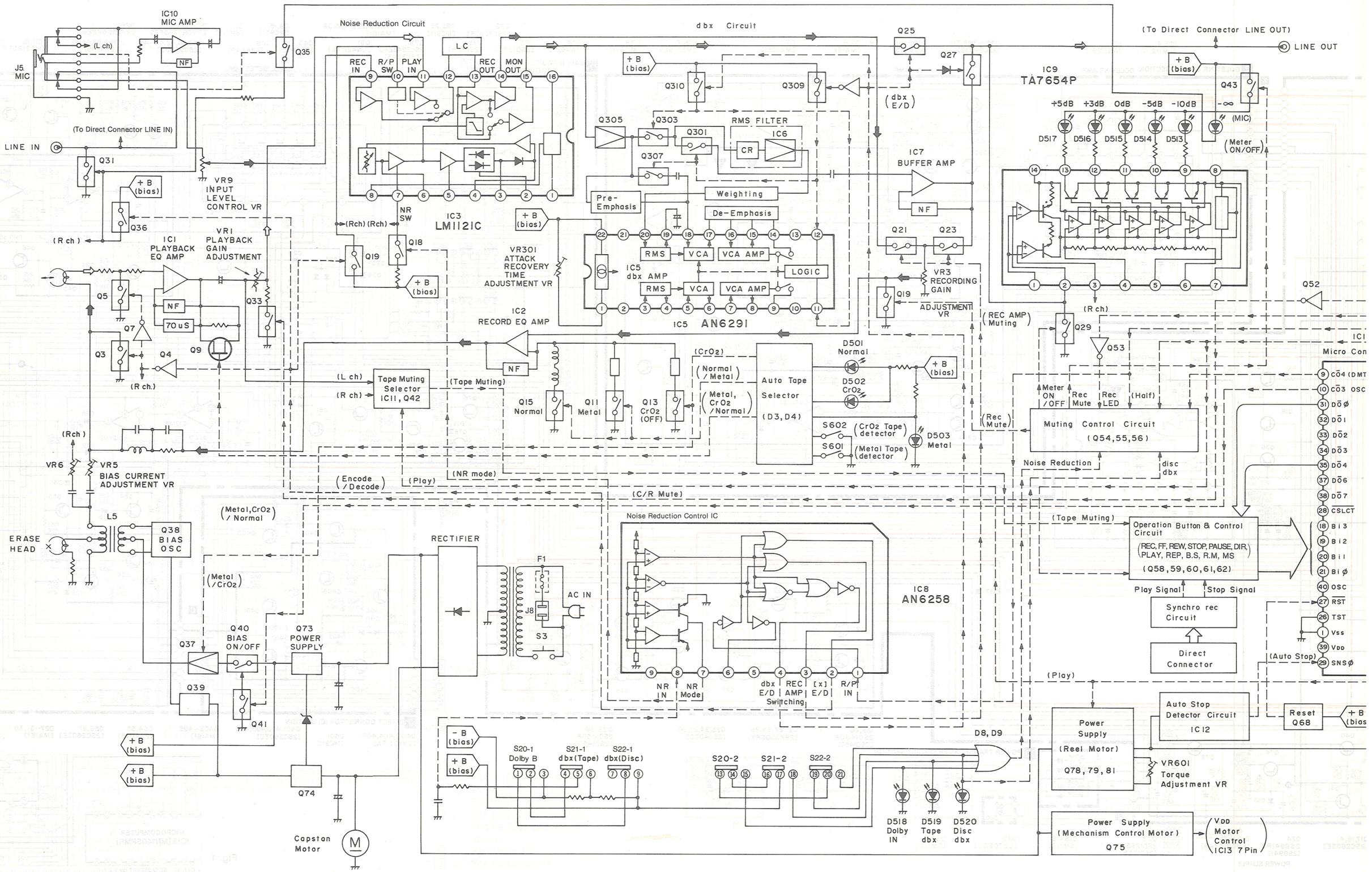
Terminal No.	Symbol	Name	Function/operation
8.	CO5	Drive motor CW rotation command	• "High" level pulse in each mode in operational sequence FOW PLAY → PAUSE → STOP → REV PLAY. 
9.	CO4	Muting for all amplifiers	• "High" level during FF, REW and STOP. • "Low" level during REC, PLAY and CUE/REV.
10.	CO3	Bias oscillation ON/OFF	• Goes to "High" immediately after REC or PAUSE operation. • Remains in "High" during REC or PLAY operation. • Goes to "Low" approximately 175msec after the STOP command is given. 
11.	CO2	FF/REW motor rotation select (FF/REW motor CCW rotation command)	• "High" level during: { FOW PLAY, FOW FF, REV REW }
12.	CO1	FF/REW motor rotation select (FF/REW motor CW rotation command)	• "High" level during: { REV PLAY, REV FF, FOW REW }
13.	COϕ	FF and REW blinking-indication command	• "High" level during FF and REW. 
14.	AI3	Reading of input switch state CAM B (S606)	• Input in switching-over from FOW PLAY to REV PLAY. 
15.	AI2	Reading of input switch state CAM A (S605)	
16.	AI1	Connection to +B (bias)	
17.	AIϕ	Reading of input switch state REC INH	• "High" level when a tape not prepared with miserase prevention masking is loaded. • "Low" level with the cassette lid open.
18.	BI3	Reading of input switch state DIR	• Waveform when the cassette lid is closed with no tape loading. 

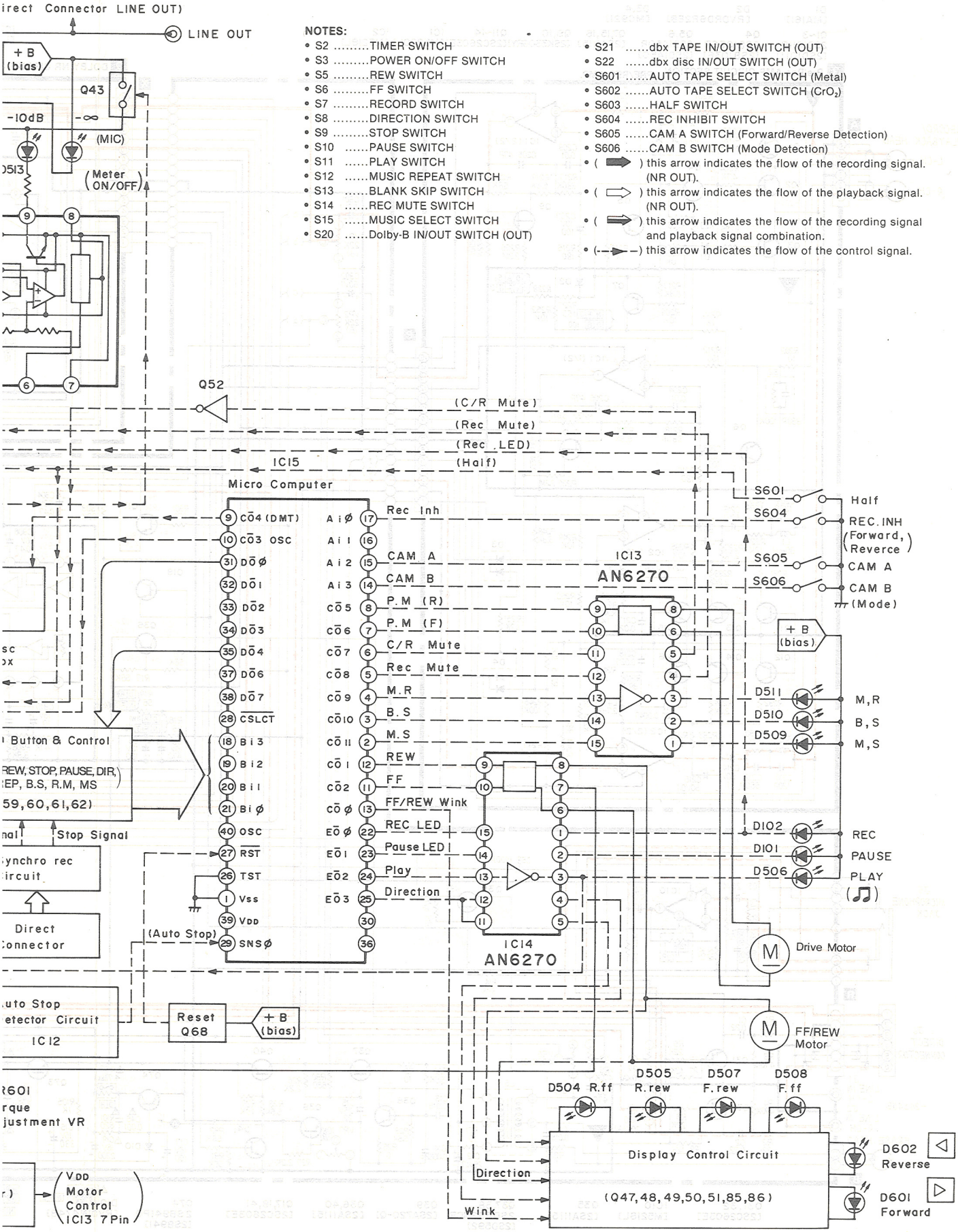
Terminal No.	Symbol	Name	Function/operation
19.	BI2	Reading of input switch state REC • PLAY	• Waveform when the cassette lid is closed with no tape loading. 
20.	BI1	Reading of input switch state BS • PAUSE • FF	• Waveform when the cassette lid is closed with no tape loading. 
21.	BIϕ	Reading of input switch state BS • PAUSE • FF	• Waveform when the cassette lid is closed with no tape loading. 
22.	EOϕ	REC indication output	• "High" level concurrently with REC command. • In TIMER REC mode, "High" level just after power on. • In TIMER REC mode, "High" level remains unchanged even if the automatic stop reset mechanism operates with power on. 
23.	EO1	PAUSE indication output	• "High" level concurrently with PAUSE command. 
24.	EO2	Reel takeup torque selection and blank skip LED indication	• "High" level during PLAY. • "Low" level during FF, REW and STOP.
25.	EO3	DIRECTION indication output	• "Low" level during FORWARD. • "High" level during REVERSE.
26.	—	——	• Connection to GND.
27.	RST	Reset terminal	• Terminal for reset signal to computer. • Reset at "Low" level (less than 0.8 volts). 
28.	CSLCT	——	• Non connection.
29.	SNSϕ	End-of-tape detection	

Terminal No.	Symbol	Name	Function/operation
30.			• Non connection.
31.	DOϕ	Input switch scanning	 Pulse width: Ta = Approx. 2.0 msec, Tb = Approx. 100 μsec.
32.	DO1		
33.	DO2		
34.	DO3		
35.	DO4		
36.	DO5		• Non connection.
37.	DO6		
38.	DO7		
39.	V_{DD}	Power supply terminal	• Operative on 4.6 to 6.0 volts (typically 5.5 volts).
40.	OSC	Oscillation terminal	• Generates oscillation at approximately 600 kHz. • Because the connection of a probe affects the terminal, nothing should be connected to this terminal for any other measurements. • Use Dϕ to 3 in measuring the computer's velocity; Approx. 125 Hz in STOP condition. 

RS-8R RS-8R

BLOCK DIAGRAM





NOTES:

- S2 .....TIMER SWITCH
- S3 .....POWER ON/OFF SWITCH
- S5 .....REW SWITCH
- S6 .....FF SWITCH
- S7 .....RECORD SWITCH
- S8 .....DIRECTION SWITCH
- S9 .....STOP SWITCH
- S10 .....PAUSE SWITCH
- S11 .....PLAY SWITCH
- S12 .....MUSIC REPEAT SWITCH
- S13 .....BLANK SKIP SWITCH
- S14 .....REC MUTE SWITCH
- S15 .....MUSIC SELECT SWITCH
- S20 .....Dolby-B IN/OUT SWITCH (OUT)
- S21 .....dbx TAPE IN/OUT SWITCH (OUT)
- S22 .....dbx disc IN/OUT SWITCH (OUT)
- S601 .....AUTO TAPE SELECT SWITCH (Metal)
- S602 .....AUTO TAPE SELECT SWITCH (CrO_2)
- S603 .....HALF SWITCH
- S604 .....REC INHIBIT SWITCH
- S605 .....CAM A SWITCH (Forward/Reverse Detection)
- S606 .....CAM B SWITCH (Mode Detection)
- (➡) this arrow indicates the flow of the recording signal. (NR OUT).
- (⇨) this arrow indicates the flow of the playback signal. (NR OUT).
- (➡) this arrow indicates the flow of the recording signal and playback signal combination.
- (-►-) this arrow indicates the flow of the control signal.

SCHEMATIC DIAGRAM

D1 [MA161] Q1~3 2SD101R [2SD101I]
D2 [RVDRD6R2EB] Q4 2SB1036R [2SB1036]
D3,4 [MC921] Q5,6 2SD1450R [2SD1450]
Q7,15,16 [2SAIII5] Q9,10 [2SK330GRY] Q11~14 [2SC2603E] IC1 [M5220L] IC2 [M5218L]
IC3,4 [LM1121C] IC5 [AN6291]
Q301~308,311 [2SC2603E] Q309,310 [2SAIII5] D5,6 [MA161] D7 [MA1051]
IC6,7 [M5218L] D38 [MC911] IC8 [AN6258] Q75 [2SD1275] Q78 [2SAIII5]
Q76 [2SC2603E] D23,24 [MC9

3 Pre/Rec AMP CIRCUIT SECTION PRE/REC AMP.
2 DOLBY NR CIRCUIT SECTION DOLBY NR AMP.
dbx AMP.
1 MAIN CIRCUIT SECTION NR CONTROL
RECORD/ PLAYBACK HEAD
L-CH
R-CH
IC5
RMS
VCA
LOGIC
IC8
J5 MICROPHONE JACK
J6 DIRECT CONNECTOR
J1 LINE IN L-CH
J2 LINE IN R-CH
-24±4dB
ERASE HEAD
J3 LINE OUT (L-CH)
J4 LINE OUT (R-CH)
J7 DIRECT CONNE
10 POWER TRANSFORMER CIRCUIT SECTION

Q19,20 2SD1450R [2SD1450]
Q21,22,25,26 [2SK330GRY]
Q23,24,27,28 [2SJ40CD]
Q29,30 2SD1450R [2SD1450]

Q31,32 [2SC2603E]
IC10 [M5218L]
Q35 [2SAIII5]
Q37,38 2SD592NCR [2SD592]
BIAS OSC.
Q39 [2SA720-Q]
Q36,40 [2SAIII5]
Q17,18,41 [2SC2603E]
Q74 2SB941PQ [2SB941]
POWER SUPPLY
D10 [RVDIN4748]
Q73 2SD1265P [2SD1265]
D16~19 [SMI12]
D20 [LD702DU]
D37 [SMI12]

D38 [MC911] | IC8 [AN6258] | Q75 [2SD1275] | Q78 [2SA1115] | Q79 2SC3243EFG [2SC3243] | Q81 [UN421ITA] | Q43 [2SA1115] | IC9 [TA7654P] | Q76 [2SC2603E] | D23,25 [MC911] | D8,13,21,22,24,35,36 [MA161] | D9,15 [MC921] | D11 [SM1112] | D12 [RVDRD7R5FB] | D26 [RVDRD6R2EB] | Q33,34,42,44~46 [2SC2603E] | Q52,53,58,59 [2SA1115] | IC11,12 [M5218L] | Q60 [2SC2603E] | Q86 [UN421ITA] | Q85 [UN4111] | Q47,48 [UN4113] | IC15 [MN1405RMS] | IC13,14 [AN6270] | Q49~51 [2SC2603E]

1 MAIN CIRCUIT SECTION — NR CONTROL — LEVEL METER AMP.

5 CIRCUIT SECTION

6 MECHANISM CIRCUIT SECTION

4 KEY BOARD CIRCUIT SECTION

7 DIRECT CONNECTOR (C) SECTION

MICROCOMPUTER IC15 [MN1405RMS]

MICROCOMPUTER IC15 [MN1405RMR]

Q29,30 2SD1450R [2SD1450]

Q402,404,407 [UN421ITA] | D401 [MC911] | Q401,403,405,406 [2SC2603E] | D402~405 [MA161] | Q54,55 [2SA1115] | Q56,57 [2SC2603E] | D27~31,39 [MA161] | Q61,62 [2SA1115] | D103~116 [MA161] | Q68,69 [UN421ITA]

Fig. 1

* C47, 48...ECEA25Z4R7 (25V 4.7μ)

CAUSION (1)

Precautions when servicing the microcomputer (IC15)

* This product includes a microcomputer (IC15), either an MN1406RMR or MN1405RMS.

- The product using the MN1405RMR must have C47 and C48 on the foil (back) side of the PC board.
  The following label is placed on the MN1405RMR microcomputer.

  [MN1405RMR]—[MN1405RMS] QQC2073
  MN1405RMR is used in this unit. When you use a MN1405RMS, remove two of 4.7μF 25V (C47 and C48) on the foil side of the P.C.B.

- The product using the MN1405RMS does not need capacitors on the foil (back) side.

* When servicing the product which employs an MN1405RMR, remove the C47 and C48 capacitors as shown fig. 1, since only the MN1405RMS is supplied.

NOTES:

- [D] .....For all European areas except United Kingdom.
- [B] .....For United Kingdom.
- [N] .....For Asia, Latin America, Middle East and Africa areas.
- [F] .....For Asian PX.
- [J] .....For European PX.

NOTES:

- S2 .....Timer switch (shown in 1 position). (1...TIMER REC, 2...OFF, 3...TIMER PLAY)
- S3 .....Power ON/OFF switch (shown in OFF position).
- S4 .....AC power voltage select switch.
  - [B].....For United Kingdom.
  - [N].....For Asia, Latin America, Middle East and Africa areas.
  - [FJ]...For PX.
- S5 .....Rewind switch (shown in OFF position).
- S6 .....FF switch (shown in OFF position).
- S7 .....Record switch (shown in OFF position).
- S8 .....Direction switch (shown in OFF position).
- S9 .....Stop switch (shown in OFF position).
- S10.....Pause switch (shown in OFF position).
- S11.....Play switch (shown in OFF position).
- S12.....Music repeat switch (shown in OFF position).
- S13.....Blank skip switch (shown in OFF position).
- S14.....REC Mute switch (shown in OFF position).
- S15.....Music select switch (shown in OFF position).
- S20-1—S20-2...Dolby-B IN/OUT switch (shown in OUT position).
- S21-1—S21-2...dbx tape IN/OUT switch (shown in OUT position).
- S22-1—S22-2...dbx disc IN/OUT switch (shown in OUT position).
- S601 .....Auto tape select switch (for Metal tape).
- S602 .....Auto tape select switch (for CrO_2 tape).
- S603 .....Half switch (shown in OFF position).
- S604 .....REC inhibit switch (shown in OFF position).
- S605 .....Forward/Reverse detection switch (shown in OFF position).
- S606 .....Mode detection switch (shown in OFF position).
- VR1, 2.....Playback gain adjustment VR.
- VR3, 4.....Overall gain adjustment VR.
- VR5, 6.....Bias current adjustment VR.
- VR7 .....Erase current adjustment VR.
- VR9, 10 .....Input level controls.
- VR301 .....Attack recoverly time adjustment VR.
- VR601 .....Takeup torque adjustment VR.
- Point (A), (B) ...Input scanning time adjustment points.
- L1, 2 .....Bias trap adjustment coil.
- L5 .....Bias Oscillation coil.
- L301, 302 .....MPX coil.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1 K = 1,000(Ω), 1 M = 1,000 k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - ( ).....Voltage values at record mode.
  - Tape .....Voltage values at dbx tape mode.
  - disc .....Voltage values at dbx disc mode.
  - CrO_2 .....Voltage values at CrO_2 tape mode.
  - Metal .....Voltage values at Metal tape mode.
  - Stop .....Voltage values at Stop mode.
  - CUE/REV .....Voltage values at CUE/REV mode.
  - FF/REW.....Voltage values at FF/REW mode.
  - REC MUTE.....Voltage values at REC MUTE mode.
  - Dolby .....Voltage values at Dolby NR mode.
  - MS .....Voltage values at music select mode.
  - BS .....Voltage values at blank skip mode.
  - MR .....Voltage values at music repeat mode.

  For measurement use VTVM.
- (▬▶) indicates B+ (bias).
- (◀▬) indicates B− (bias).
- (■▶■) indicates the flow of the playback signal. (NR out).
- (■▶■) indicates the flow of the recording singal. (NR out).
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.
  e.g. Q1
  2SC1844(E,F)——Production parts number
  [2SC1844E]———Supply parts number
  D212
  1S2473T77———Production parts number
  [MA161]———Supply parts numbers
- The supply parts number is described alone in the replacement parts list.

- **This schematic diagram may be modified at any time with the development of new technology.**

IC13

	Playback mode	Record mode	
1	8.6 V	8.8 V	MS SW ON 0 V
2	8.6 V	8.8 V	BS SW ON 0 V
3	8.6 V	8.8 V	MR SW ON 0 V
4	10.1 V	10.3 V	REC MUTE 0 V
5	10.1 V	10.3 V	CUE/REV 0 V
6	0 V	0 V	
7	6.5 V	6.5 V	
8	0 V	0 V	
9	0 V	0 V	
10	0 V	0 V	
11	0 V	0 V	CUE/REV 4.5 V
12	0 V	0 V	REC MUTE 4.5 V
13	0 V	0 V	MR SW ON 4.6 V
14	0 V	0 V	BS SW ON 4.5 V
15	0 V	0 V	MS SW ON 4.5 V
16	13.6 V	13.9 V	

IC14

	Playback mode	Record mode	
1	8.6 V	0.1 V	Stop 8.9 V
2	8.7 V	0.1 V	Pause 0.1 V
3	0.2 V	10.1 V	Stop 10.2 V
4	3.3 V Reverse 0.1 V	3.3 V	
5	0.4 V Reverse 0 V	0.3 V	
6	5.5 V	0 V	FF/REW 9.6 V CUE/REV 9.6 V
7	5.5 V	10.0 V	Stop 10.1 V
8	0.1 V	0 V	FF/REW 9.5 V CUE/REV 9.5 V
9	0.1 V Reverse 4.6 V	0 V	FF/REW 4.6 V
10	4.6 V	0 V	
11	0.1 V Reverse 4.6 V	0.1 V	
12	0.1 V Reverse 4.6 V	0.1 V	
13	4.6 V	0.1 V	Stop 0.1 V
14	0.1 V	4.6 V	Pause 4.6 V
15	0.1 V	4.6 V	Stop 0.1 V
16	13.6 V	13.9 V	

SPECIFICATIONS

* Input level controls...MAX

Playback S/N ratio * Test tape...QZZCFM	Greater than 45 dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO_2 ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio * Test tape...QZZCRA	Greater than 43 dB (without NAB filter)

Q301

	Playback mode	Record mode
B	1.9 V DISC 0.5 V	1.9 V
C	1.3 V DISC 1.2 V	1.3 V
E	1.3 V DISC 1.9 V	1.3 V

Q302

	Playback mode	Record mode
B	1.9 V DISC 0.1 V	1.9 V
C	1.3 V DISC 1.3 V	1.3 V
E	1.3 V DISC 1.9 V	1.3 V

Q303

	Playback mode	Record mode
B	0.4 V DISC 2.5 V	0.4 V
C	1.3 V DISC 1.9 V	1.3 V
E	1.9 V DISC 1.9 V	1.9 V

Q304

	Playback mode	Record mode
B	0.4 V DISC 2.5 V	0.4 V
C	1.3 V DISC 1.9 V	1.3 V
E	1.9 V DISC 1.9 V	1.9 V

Q307

	Playback mode	Record mode
B	2.6 V DISC 0.5 V	2.6 V
C	1.9 V DISC 1.9 V	1.9 V
E	1.9 V DISC 1.0 V	1.9 V

Q308

	Playback mode	Record mode
B	2.5 V DISC 0.5 V	2.5 V
C	1.9 V DISC 1.9 V	1.9 V
E	1.9 V DISC 1.0 V	1.9 V

Q309

	Playback mode	Record mode
B	4.5 V DISC 4.8 V	4.5 V
C	5.2 V DISC 5.2 V	5.2 V
E	5.2 V DISC 0.5 V	5.2 V

Q310

	Playback mode	Record mode
B	4.7 V DISC 4.5 V	4.8 V
C	5.2 V DISC 5.2 V	5.2 V
E	0.4 V DISC 5.2 V	0.4 V

Q311

	Playback mode	Record mode
B	0.7 V DISC −2.4 V	0.7 V
C	0.1 V DISC 10.1 V	0.1 V
E	0 V DISC 0 V	0 V

Q50

	Playback mode	Record mode
B	0.1 V Reverse 0.6 V	0 V
C	0.5 V Reverse 0 V	0.5 V
E	0 V Reverse 0 V	0 V

Q18

	Playback mode		Record mode	
B	−10.9 V	Dolby −7.6 V	−10.7 V	Dolby −7.3 V
C	−3.0 V	Dolby −8.3 V	−2.8 V	Dolby −8.0 V
E	−8.6 V	Dolby −8.3 V	−8.2 V	Dolby −8.0 V

Q21

	Playback mode		Record mode	
D	0.1 V	Tape 0.1 V	0.1 V	Tape 0 V
G	0.6 V	Tape −9.0 V	0.7 V	Tape −8.8 V
S	0.1 V	Tape 0 V	0.1 V	Tape 0 V

Q22

	Playback mode		Record mode	
D	0.1 V	Tape 0 V	0.1 V	Tape 0 V
G	0.6 V	Tape −8.8 V	0.7 V	Tape −8.8 V
S	0.1 V	Tape 0 V	0.1 V	Tape 0 V

Q23

	Playback mode		Record mode	
D	0 V	Tape 0 V	0 V	Tape 0 V
G	8.4 V	Tape −0.5 V	8.5 V	Tape −0.5 V
S	0.1 V	Tape 0 V	0.1 V	Tape 0 V

Q24

	Playback mode		Record mode	
D	0 V	Tape 0 V	0 V	Tape 0 V
G	8.4 V	Tape −0.5 V	8.4 V	Tape −0.5 V
S	0.1 V	Tape 0 V	0.1 V	Tape 0 V

Q25

	Playback mode		Record mode	
D	0 V	Tape 0 V	0.1 V	Tape 0 V
G	0.5 V	Tape −8.9 V	0.7 V	Tape −8.9 V
S	0 V	Tape 0.1 V	0.1 V	Tape 0.1 V

Q26

	Playback mode		Record mode	
D	0 V	Tape 0 V	0.1 V	Tape 0 V
G	0.5 V	Tape −8.9 V	0.7 V	Tape −8.9 V
S	0 V	Tape 0.1 V	0.1 V	Tape 0.1 V

Q27

	Playback mode		Record mode	
D	0 V	Tape 0 V	0 V	Tape 0 V
G	8.1 V	Tape −0.5 V	8.3 V	Tape −0.5 V
S	0 V	Tape 0 V	0.1 V	Tape 0 V

Q28

	Playback mode		Record mode	
D	0 V	Tape 0 V	0 V	Tape 0 V
G	8.1 V	Tape −0.5 V	8.3 V	Tape −0.5 V
S	0 V	Tape 0 V	0.1 V	Tape 0 V

Q54

	Playback mode		Record mode		Stop
B	9.9 V	DISC 10.2 V	10.1 V	DISC 10.2 V	9.0 V
C	0.3 V	DISC −0.1 V	−0.2 V	DISC −0.1 V	9.7 V
E	10.0 V	DISC 10.2 V	10.2 V	DISC 10.2 V	9.8 V

Q56

	Playback mode		Record mode		Stop
B	0 V	DISC 0 V	0 V	DISC 0 V	0.7 V
C	9.9 V	DISC 10.2 V	10.1 V	DISC 10.2 V	0 V
E	0 V		0 V		

Q55

	Playback mode		Record mode		Stop
B	10.3 V	Tape 9.9 V	10.5 V	Tape 9.9 V	
C	0 V	Tape 0.7 V	0 V	Tape 0.7 V	
E	10.0 V		10.2 V		10.3 V

ELECTRICAL PARTS LIST

NOTES: RESISTORS
ERD.....Carbon
ERG .....Metal-oxide
ERS.....Metal-oxide
ERO .....Metal-film
ERX.....Metal-film
ERQ .....Fuse type metallic
ERC.....Solid
ERF.....Cement

CAPACITORS
ECBA .....Ceramic
ECG□ .....Ceramic
ECK□ .....Ceramic
ECC□ .....Ceramic
ECF□ .....Ceramic
ECQM.....Polyester film
ECQE .....Polyester film
ECQF .....Polypropylene

ECE□ .....Electrolytic
ECE□N ...Non polar electrolytic
ECQS .....Polystyrene
ECS□ .....Tantalum
QCS .....Tantalum

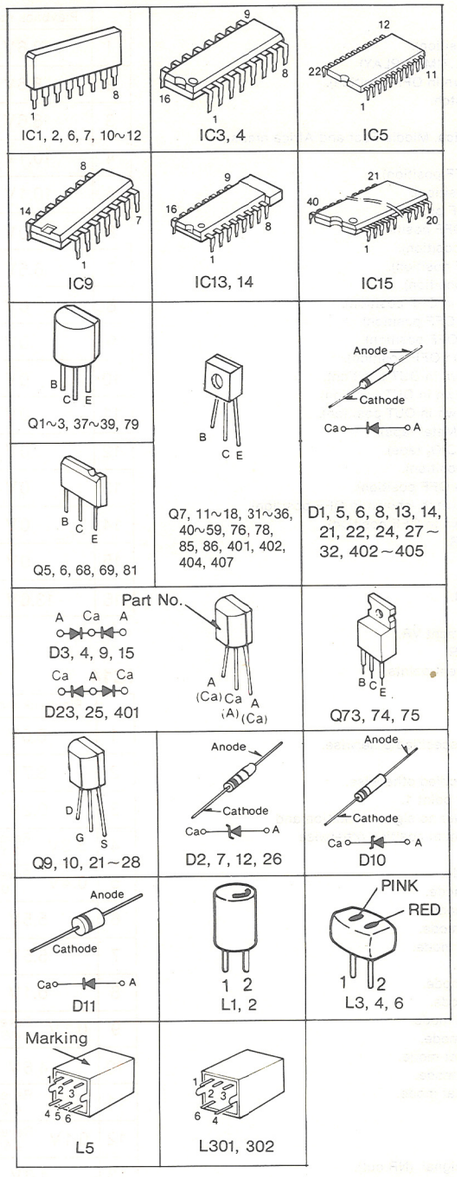
REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

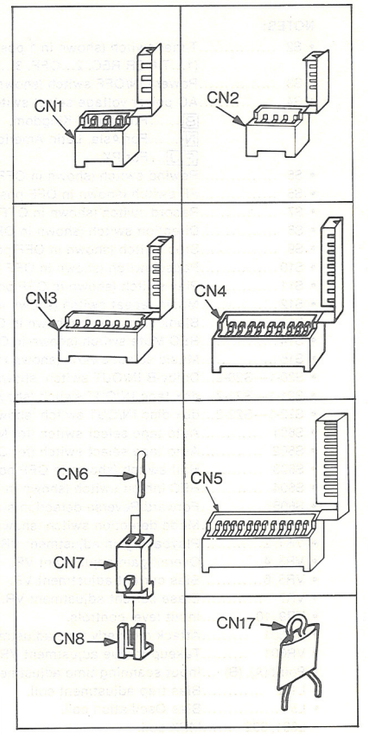
Ref. No.	Part No.
RESISTORS	
R 1, 2	ERD25TJ223
R 3, 4	ERD25TJ474
R 5, 6	ERD25TJ223
R 7, 8	ERD25FJ122
R 9	ERD25FJ101
R 10	ERD25TJ223
R 11	ERD25TJ104
R 12	ERD25FJ122
R 13	ERD25TJ473
R 13	ERD25FJ561
R 14	ERD25TJ333
R 15	ERD25FJ822
R 16, 17	ERD25TJ563
R 18 [DB]	ERG1ANJ560
[For all European areas.] [NFJ]	ERD25FJ560
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 19 [DB]	ERG1ANJ560
[For all European areas.] [NFJ]	ERD25FJ560
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 20	ERD25FJ1R0
R 21	ERD25FJ100
R 22, 23	ERD25FJ562
R 24, 25	ERD25FJ100
R 26, 27	ERD25FJ222
R 28	ERD25FJ562
R 29	ERD25FJ103
R 30	ERD25FJ681
R 31, 32	ERD25TJ563
R 33	ERD25FJ103
R 35, 36	ERD25FJ682
R 37, 38	ERD25FJ152
R 39, 40, 41, 42	ERD25TJ225
R 43, 44	ERD25TJ223
R 45, 46, 47, 48	ERD25TJ225
R 49, 50	ERD25FJ103
R 51, 52	ERD25FJ102
R 53, 54	ERD25FJ182
R 55, 56	ERD25TJ474
R 57, 58	ERD25TJ104
R 59	ERD25TJ153
R 60, 61, 62	ERD25TJ563
R 63	ERD25TJ124
R 64, 65	ERD25FJ102
R 66	ERD25FJ821
R 67, 68	ERD25FJ561
R 69	ERD25FJ222
R 70, 71	ERD25FJ472
R 72	ERD25FJ682
R 73	ERD25FJ222
R 74, 75	ERD25FJ181
R 76, 77	ERD25TJ183
R 78	ERD25TJ683
R 79	ERD25FJ103
R 80	ERD25FJ681
R 81, 82	ERD25FJ102
R 83	ERD25FJ272
R 85	ERD25FJ101
R 86	ERD25TJ683
R 87	ERD25FJ103
R 88	ERD25TJ104
R 89	ERD25FJ103
R 90	ERD25TJ124
R 91, 92	ERD25FJ472
R 93	ERD25FJ272
R 94	ERD25FJ102
R 95	ERD25TJ184
R 96	ERD25TJ104
R 97, 98	ERD25FJ103
R 99	ERD25TJ563
R 100	ERD25FJ681
R 101	ERD25FJ821
R 102 [DB] ⚠	ERQ12HJ3R9
[For all European areas.] [NFJ] ⚠	ERX12ANJ3R9
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 103 [DB] ⚠	ERD2FCJ4R7
[For all European areas.] [NFJ] ⚠	ERD25FJ3R9
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 105	ERD25FJ102
R 106	ERX1ANJ8R2
R 107	ERD25FJ102
R 108 [DB]	ERD25TJ153
[For all European areas.]	
R 109 [DB]	ERD25TJ123
[For all European areas.]	
R 110	ERD25FJ100
R 111	ERD25FJ103
R 114	ERD25FJ391
R 115	ERD25FJ101
R 116	ERD25TJ334
R 117	ERD25FJ103
R 118	ERD25FJ332
R 121, 122, 123, 124	ERD25FJ561
R 125	ERD25FJ681
R 126	ERD25FJ821
R 127 [DB]	ERD25FJ391
[For all European areas.] [NFJ]	ERD25FJ471
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 128	ERD25TJ473
R 129	ERD25FJ101
R 132	ERD25TJ563
R 133 [DB]	ERQ14AJ180
[For all European areas.] [NFJ]	ERD25FJ180
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 135, 136	ERD25TJ563
R 137	ERD25FJ472
R 138	ERD25TJ223
R 139	ERD25FJ103
R 140	ERD25FJ562
R 141	ERD25TJ223
R 142	ERD25TJ473
R 143	ERD25FJ562
R 144, 145, 146, 147, 148, 149, 150	ERD25TJ223
R 151, 152	ERD25FJ103
R 153	ERD25TJ104
R 154	ERD25FJ472
R 155	ERD25TJ183
R 156	ERD25TJ393
R 157	ERD25TJ473
R 158, 159	ERD25TJ223
R 160	ERD25FJ562
R 161, 162, 163	ERD25FJ103
R 168	ERD25TJ393
R 170 [DB]	ERQ14AJ560
[For all European areas.]	
R 171	ERD25FJ821
R 172	ERD25FJ102
R 173, 174	ERD25FJ562
R 175	ERD25FJ391
R 201, 202	ERD25FJ100
R 203, 204	ERD25FJ472
R 205	ERD25FJ561
R 206	ERD25TJ563
R 207	ERD25TJ123
R 208, 209	ERD25FJ103
R 210	ERD25FJ682
R 211, 212	ERD25FJ101
R 213, 214	ERD25FJ102
R 215, 216	ERD25FJ181
R 217, 218	ERD25TJ334
R 219, 220	ERD25FJ682
R 221, 222	ERD25FJ562
R 223, 224	ERD25TJ104
R 225, 226	ERD25TJ225
R 227 [DB]	ERD25FJ101
[For all European areas.] [NFJ]	ERD25FJ151
[For PX. For Asia, Latin America, Middle East and Africa areas.]	
R 228 [DB]	ERD25FJ560
[For all European areas.]	
R 229, 230	ERD25TJ123
R 231, 232	ERD25FJ272
R 233, 234	ERD25FJ222
R 235, 236	ERD25FJ103
R 237, 238	ERD25FJ272
R 239, 240	ERD25FJ390
R 241, 242	ERD25FJ102
R 243	ERD25TJ563
R 243	ERD25FJ682
R 244	ERD25TJ333
R 244	ERD25FJ682
R 245	ERD25FJ103
R 246	ERD25TJ104
R 247	ERD25TJ154
R 248	ERD25FJ332
R 249, 250	ERD25FJ103
R 251	ERD25FJ122
R 252	ERD25FJ103
R 301	ERD25TJ274
R 302	ERD25FJ103
R 303	ERD25TJ223
R 305, 306	ERD25TJ473
R 307, 308	ERD25FJ332
R 309, 310	ERD25TJ274
R 311, 312	ERD25TJ753
R 313, 314	ERD25TJ163
R 315, 316	ERD25FJ102
R 317, 318, 319, 320	ERD25TJ104
R 321, 322, 323, 324, 325, 326	ERD25TJ223
R 327, 328	ERD25FJ332
R 329, 330	ERD25FJ822
R 331, 332	ERD25TJ333
R 333, 334	ERD25TJ104
R 335, 336	ERD25TJ153
R 337, 338, 339, 340	ERD25FJ472
R 341, 342	ERD25TJ333
R 345, 346	ERD25FJ102
R 347, 348	ERD25FJ103
R 349, 350	ERD25FJ151
R 351, 352	ERD25FJ472
R 353, 354	ERD25TJ153
R 355, 356	ERD25TJ104
R 357, 358, 359, 360, 361	ERD25FJ102
R 362	ERD25FJ222
R 363	ERD25TJ153
R 364	ERD25FJ331
R 366, 367	ERD25TJ473
R 368	ERD25TJ223
R 369	ERD25TJ153
R 370	ERD25TJ103
R 371	ERD25TJ123
R 401	ERD25FJ272
R 403	ERD25FJ103
R 404	ERD25TJ104
R 405	ERD25TJ334
R 407	ERD25TJ333
R 408	ERD25TJ334
R 410	ERD25FJ103
R 413	ERD25TJ473
R 414	ERD25TJ223
VARIABLE RESISTORS	
VR 1, 2	QVNB3A00B223
VR 3, 4	QVNB3A00B103
VR 5, 6	QVNB3A00B474
VR 7	QVNB3A00B103
VR 9, 10	QVBP1P05CA24
VR 301	EVNM0AA00B23
VR 601	EVNM4AA00B13
CAPACITORS	
C 1, 2	ECQV1H224JZ
C 3, 4	ECCD1H470K
C 5	ECEA1AS471
C 6	ECEA1AS101
C 7, 8	ECEA1HS100
C 9, 10	ECEA25Z4R7
C 11	ECQP1183JZ
C 12	ECEA25Z4R7
C 13	ECFDD153KVY
C 14	ECFDD822KVY
C 15	ECEA1ES220
C 16	ECEA1AS331
C 17 ⚠	ECEA1ES101
C 18 ⚠	ECEA1ES332
C 19 ⚠	ECEA1CS222
C 20	ECEA1ES332
C 21	ECKD1H223ZF
C 23, 24, 25	ECEA50Z1
C 26	ECEA1HN010
C 27	ECEA1AS470
C 28	ECQV1H104JZ
C 29, 30	ECEA1HS100
C 31	ECQV05474JZ
C 32	ECEA50Z1
C 33	ECEA1ES220
C 34	ECEA1CS471
C 35	ECEA50Z1
C 36	ECEA1HS100
C 37	ECEA1AS101
C 38	ECKD1H223ZF
C 39	ECCD1H331J
C 40	ECCD1H470K
C 41	ECEA50Z1
C 42	ECEA1HS100
C 43	ECKD2H472PE
C 43, 44	ECEA1HS100
C 45, 46 ⚠	ECKD1H102MD
C 50	ECKD1H221KB
C 51	ECCD1H120J
C 52, 53	ECKD1H102MD
C 54	ECEA50Z1
C 55 ⚠	ECQU2A103MF
C 203, 204	ECQV1H103JZ
C 205, 206	ECCD1H470K
C 207, 208	ECEA1AS101
C 209, 210	ECKD2H121KB
C 211, 212	ECKD1H561KB
C 213, 214	ECEA50Z1
C 215, 216	ECEA1HS0R1
C 217, 218	ECQV1H273JZ
C 219, 220	ECFDD472KVY
C 301, 302	ECEA50Z1
C 303, 304, 305, 306	ECEA50ZR47
C 307, 308	ECFDD392KVY
C 309, 310	ECEA1HS100
C 311, 312	ECQV1H472JZ
C 313, 314	ECQV1H473JZ
C 315, 316	ECEA50MR33R
C 317, 318	ECQV1H104JZ
C 319, 320	ECEA1HS100
C 321, 322	ECQV1H333JZ
C 323, 324	ECEA50ZR22
C 325, 326	ECEA50MR68R
C 327, 328	ECCD1H471J
C 329, 330	ECQV1H223JZ
C 331, 332	ECEA1HS100
C 333, 334, 335, 336	ECQV1H104JZ
C 337, 338, 339, 340	ECQV1H332JZ
C 341, 342	ECCD1H331J
C 343, 344	ECEA1HS100
C 345, 346	ECQV1H333JZ
C 347, 348	ECEA50MR33R
C 349, 350	ECEA1AS470
C 351, 352	ECCD1H391J
C 353, 354	ECFDD472KVY
C 355, 356	ECQV1H223JZ
C 357	ECEA1HS100
C 358	ECEA50Z1
C 359, 360, 361, 362	ECEA1HS100
C 363	ECEA1AS331
C 365, 366, 367, 401	ECEA25Z4R7
SPARK KILLERS	
Z 1, 2	EXRP331K104
Z 3, 4	EXRP101K153
Z 6	EXBEQ4392K
Z 7	EXBEQ5562K
Z 10	EXRP220K124
TRANSISTORS	
Q 1, 2, 3	2SD1011
Q 4	2SB1036
Q 5, 6	2SD1450
Q 7	2SA1115
Q 9, 10	2SK330GRY
Q 11, 12, 13, 14	2SC2603E
Q 15, 16	2SA1115
Q 17, 18	2SC2603E
Q 19, 20	2SD1450
Q 21, 22	2SK330GRY
Q 23, 24	2SJ40CD
Q 25, 26	2SK330GRY
Q 27, 28	2SJ40CD
Q 29, 30	2SD1450
Q 31, 32, 33, 34	2SC2603E
Q 35, 36	2SA1115
Q 37, 38	2SD592
Q 39	2SA720-Q
Q 40	2SA1115
Q 41, 42	2SC2603E
Q 43	2SA1115
Q 44, 45, 46	2SC2603E
Q 47, 48	UN4113
Q 49, 50, 51	2SC2603E
Q 52, 53, 54, 55	2SA1115
Q 56, 57	2SC2603E
Q 58, 59	2SA1115
Q 60	2SC2603E
Q 61, 62	2SA1115
Q 68, 69	UN4211TA
Q 73	2SD1265
Q 74	2SB941
Q 75	2SD1275
Q 76 [DB]	2SC2603E
[For all European areas.]	
Q 78	2SA1115
Q 79	2SC3243
Q 81	UN4211TA
Q 85	UN4111
Q 86	UN4211TA
Q 301, 302, 303, 304, 305, 306, 307, 308	2SC2603E
Q 309, 310	2SA1115
Q 311, 401	2SC2603E
Q 402	UN4211TA
Q 403	2SC2603E
Q 404	UN4211TA
Q 405, 406	2SC2603E
Q 407	UN4211TA
DIODES & RECTIFIERS	
D 1	MA161
D 2	RVDRD6R2EB
D 3, 4	MC921
D 5, 6	MA161
D 7	MA1051
D 8	MA161
D 9	MC921
D 10	RVD1N4748
D 11	SM112
D 12	RVDRD7R5FB
D 13	MA161
D 15	MC921
D 16, 17, 18, 19	SM112
D 20	LD702DU
D 21, 22	MA161
D 23	MC911
D 24	MA161
D 25	MC911
D 26	RVDRD6R2EB
D 27, 28, 29, 30, 31, 34, 35, 36	MA161
D 37	SM112
D 38	MC911
D 39	MA161
D 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116	MA161
D 401	MC911
D 402, 403, 404, 405	MA161
D 601, 602	LD602GG
INTEGRATED CIRCUITS	
IC 1	M5220L
IC 2	M5218L
IC 3, 4	LM1121C
IC 5	AN6291
IC 6, 7	M5218L
IC 8	AN6258
IC 9	TA7654P
IC 10, 11, 12	M5218L
IC 13, 14	AN6270
IC 15	MN1405RMS

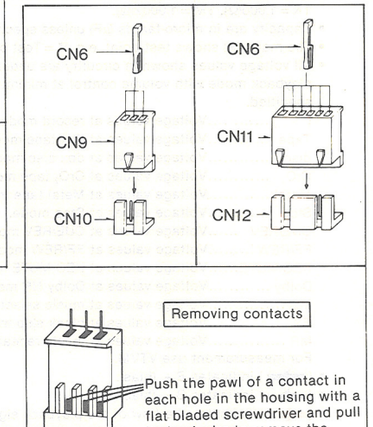
Ref. No.	Part No.	Part Name & Description
COILS		
L 1, 2	QLQX0343KWA	Trap Coil
L 3, 4	QLQX2722D	Coil
L 5	QLB0198	Bias Oscillation Coil
L 6	QLQX1012DT	Choke Coil
L 8	ELEH101KA	Coil
L 301, 302	QLM9Z9K	MPX Coil
L 601, 602, 603, 604	ELEH101KA	Coil
TRANSFORMERS		
T 1 [D] ⚠	QLPD80ELC	Power Transformer
[For all European areas except United Kingdom.]		
[BNFJ] ⚠	QLPA73ELC	Power Transformer
[For PX. For United Kingdom, Asia, Latin America, Middle East and Africa areas.]		
FUSES		
F 1 [D] ⚠	XBAQ0010	Fuse (T 1.6A)
[For all European areas except United Kingdom.]		
[NFJ] ⚠	XBA2E02NS5	Fuse (200mA)
[For PX. For Asia, Latin America, Middle East and Africa areas.]		
F 601	QRUF10WH	I.C PROTECTOR
SWITCHES		
S 2	QSS1305	Slide Switch (Timer)
S 3 ⚠	QSW1127	Push Switch (Power ON/OFF)
S 4 [BNFJ] ⚠	QSR1407H	Rotary Switch (AC Power Voltage Selector)
[For PX. For United Kingdom, Asia, Latin America, Middle East and Africa areas.]		
S 5, 6	SSG13	Key Board Switch (F.F/REW)
S 7	QSW1124	Key Board Switch with D102 (Record)
S 8, 9	SSG13	Key Board Switch (Direction/Stop)
S 10	QSW1126	Key Board Switch with D101 (Pause)
S 11, 12, 13, 14, 15	SSG13	Key Board Switch (Play/Music Repeat/ Blank Skip/Rec Mute/Music Select)
S 20, 21, 22	QSWX415	Push Switch (NR Selector)
S 601, 602, 603, 604	QSB0296	Leaf Switch (Metal tape/CrO_2 tape/Half/Rec Inhibit)
S 605, 606	QSB0295	Leaf Switch (Forward•Reverse Detection/Mode)
JACKS		
J 1, 2, 3, 4	QEJ5030C	Jack Board (LINE IN/OUT)
J 5	QJA0262	Microphone Jack
J 6, 7	SJS9607	Direct Connector
J 8		
[DNFJ] ⚠	SJS9225	AC Outlet
[For PX. For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]		
[B] ⚠	SJS9227	AC Outlet
[For United Kingdom.]		
CONNECTORS		
CN 1	QJS1997S	Jumper Socket (3 Pin)
CN 2	QJS1987S	Jumper Socket (4 Pin)
CN 3	QJS1962S	Jumper Socket (7 Pin)
CN 4	QJS1988S	Jumper Socket (9 Pin)
CN 5	QJS1990S	Jumper Socket (12 Pin)
CN 6	QJT1054	Contact
CN 7	QJS1920TN	2 Pin Socket
CN 8	QJP1920TN	2 Pin Post
CN 9	QJS1921TN	3 Pin Socket
CN 10	QJP1921TN	3 Pin Post
CN 11	QJS1922TN	6 Pin Socket
CN 12	QJP1922TN	6 Pin Post
CN 13	QJS1923TN	9 Pin Socket
CN 14	QJP1923TN	9 Pin Post
CN 15	QJS1925TNL	15 Pin Socket
CN 16	QJP1925TN	15 Pin Post
CN 17	QJT1090	Check Pin
CN 18	QJS2000S	Jumper Socket (6 Pin, Type-L)
CN 19	QJS2001S	Jumper Socket (9 Pin, Type-L)

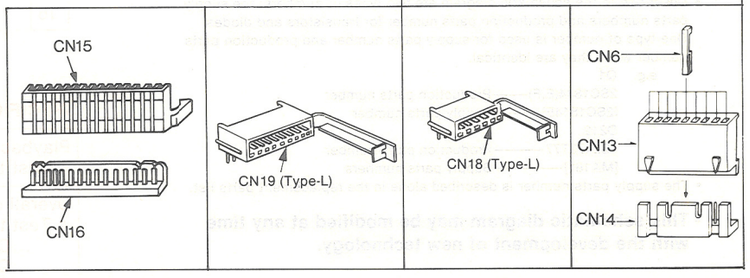
TERMINATIONS



CONNECTORS







9 8 7 6 5 4 3 2 1

A B C D E F

CONNECTOR R

1	LINE OUT (L-CH)
2	GROUND
3	LINE OUT (R-CH)
4	GROUND
5	LINE IN (L-CH)
6	LINE IN (R-CH)

7 DIRECT CONNECTOR (C) CIRCUIT BOARD

1 MAIN CIRCUIT BOARD

CONNECTION POINT Ⓐ

CONNECTION POINT Ⓑ

CAPSTAN MOTOR

FF/REW MOTOR

DRIVE MOTOR

LUG TERMINAL

6 MECHANISM CIRCUIT BOARD

S603 S601 S602 S604 VR601 R601 390

F601 L603 L604 L601 L602

10 POWER TRANSFORMER CIRCUIT BOARD

LED (D20)

S605, 606; MODE SWITCH

4 KEY BOARD CIRCUIT BOARD

S6 FF/CUE S11 PLAY S5 REW/REV

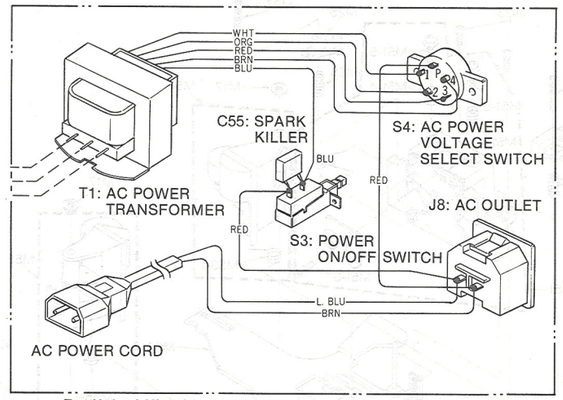
S13 BLANK SKIP S16 TIMER S12 MUSIC REPEAT S15 MUSIC SELECT

S10 (D101) S14 MUTE S7 (D102) S9 STOP S8 DIRECTION

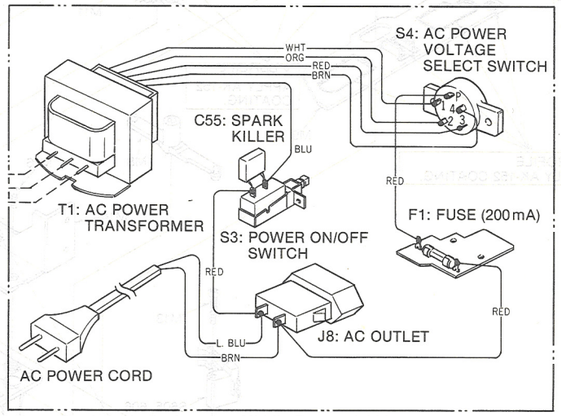
ERASE HEAD

FOR REVERSE LED(D602) FOR FORWARD LED(601)

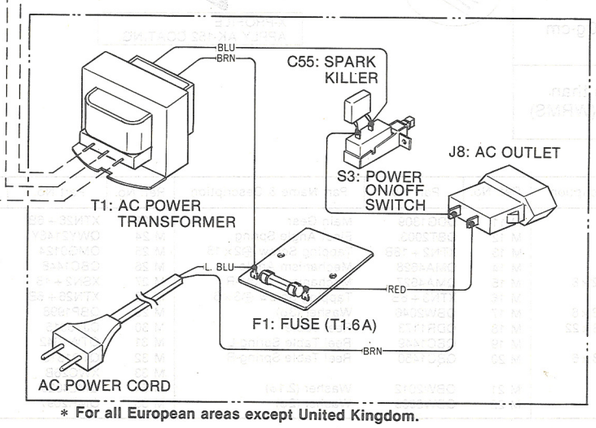
NFJ



* For United Kingdom.



* For Asia, Latin America, Middle East and Africa areas.
* For Asian PX.
* For European PX.

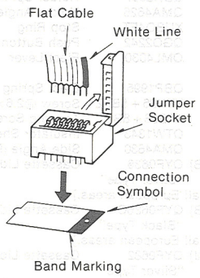


* For all European areas except United Kingdom.

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

CONNECTION OF A FLAT CABLE

Connect the flat cable to the jumper socket so that the white line on the flat cable corresponds to the band mark side of the connection symbol (yellow or white symbol on the PC board) for the jumper socket. (This connection may differ from those for conventional models.)



NOTES:

BLK .....Black
BLU .....Blue
BRN.....Brown
GRY.....Gray
GRN .....Green
L. BLU ....Light Blue
NIL.....No Color Mark
ORG .....Orange
PNK.....Pink
RED.....Red
SLD .....Shield Wire
VLT.....Violet
WHT .....White
YEL.....Yellow

NOTES:

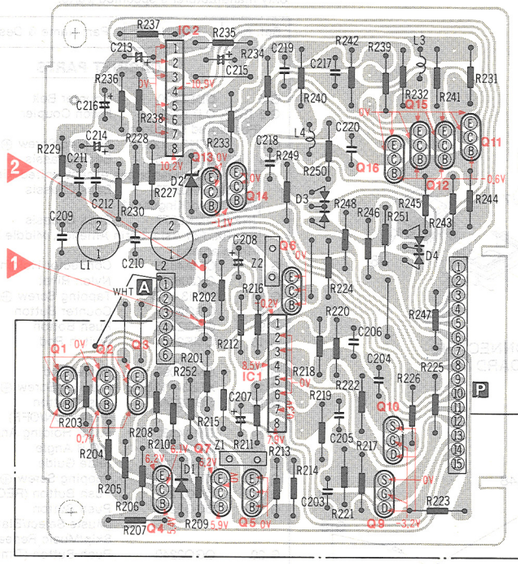
D .....For all European areas except United Kingdom.
B .....For United Kingdom.
N .....For Asia, Latin America, Middle East and Africa areas.
F .....For Asian PX.
J .....For European PX.

NOTES:

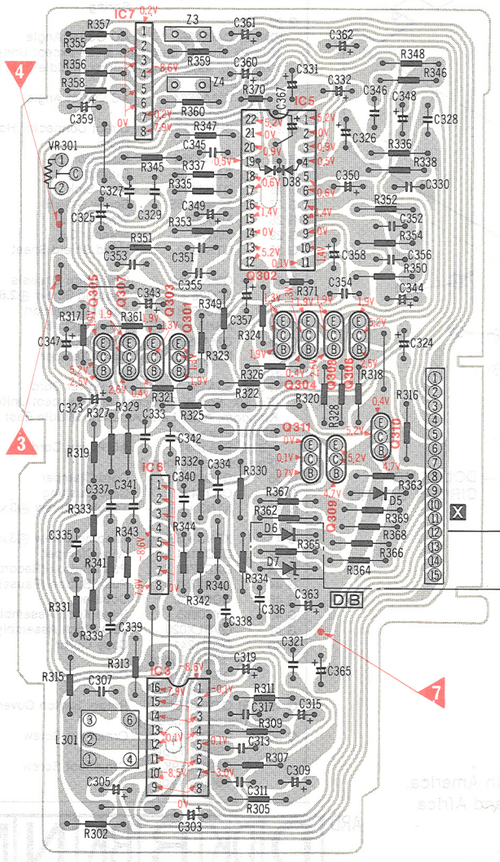
- The circuit shown in ▨ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. For measurement, use VTVM.

- **This circuit board diagram may be modified at any time with the development of new technology.**

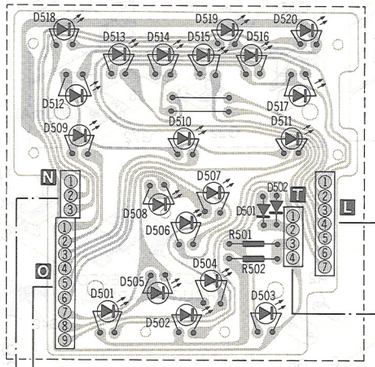
3 Pre/Rec AMPLIFIER CIRCUIT BOARD

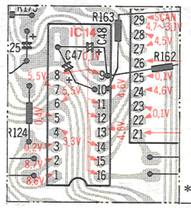


2 DOLBY NR CIRCUIT BOARD

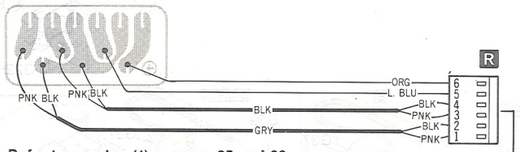


5 LED BLOCK ASS'Y (The part that must be replaced will be supplied as part of an LED block assembly.)





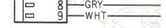
8 DIRECT CONNECTOR (A) CIRCUIT BOARD



* Refer to causion (1) on page 25 and 26.

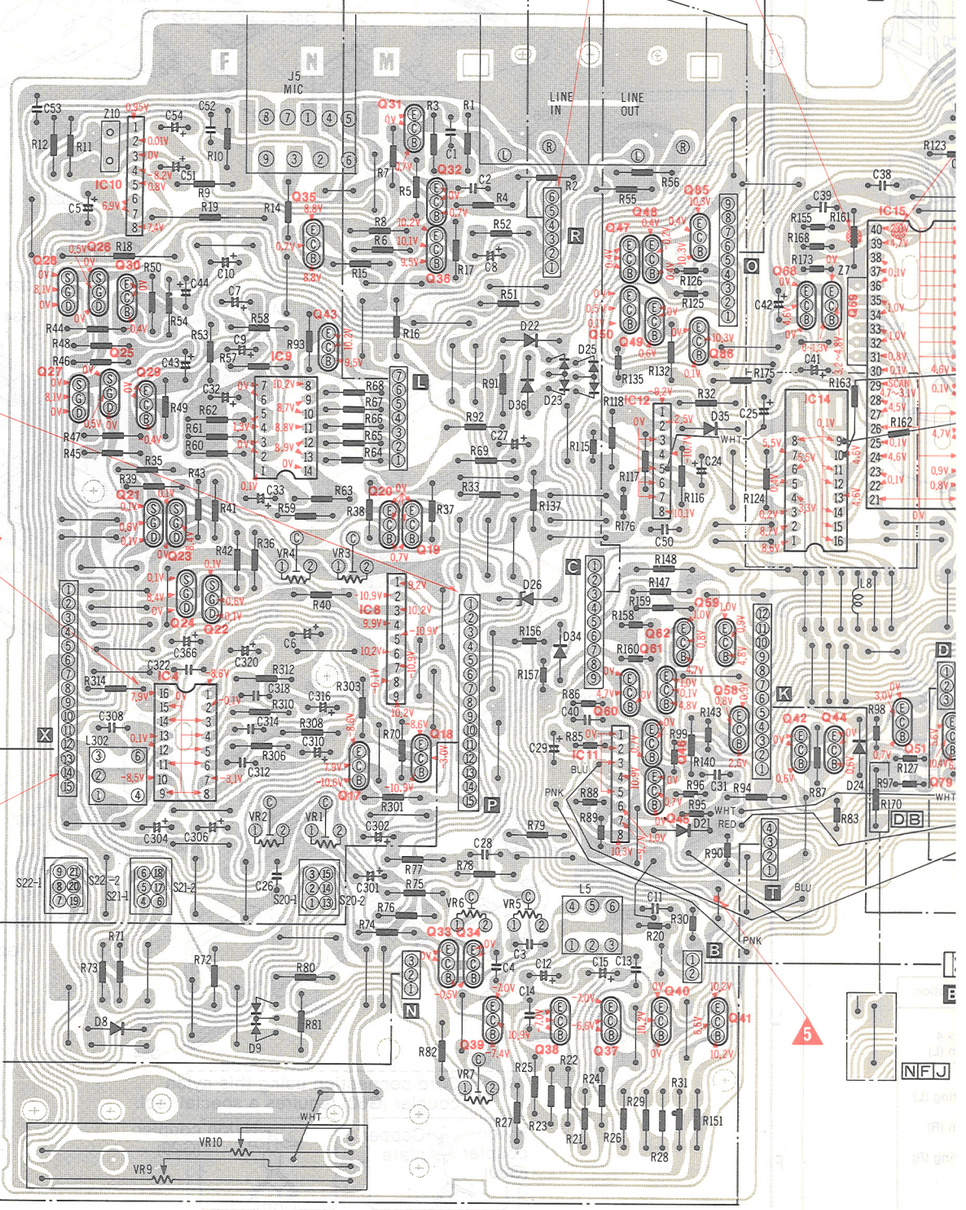
CONNECTOR R

1	LINE OUT (L-CH)
2	GROUND
3	LINE OUT (R-CH)
4	GROUND
5	LINE IN (L-CH)
6	LINE IN (R-CH)



CONNECTION POINT A

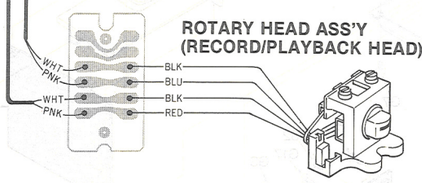
1 MAIN C



CONNECTOR P

1	Record Signal Out (L-CH)
2	B – bias
3	Record Signal Out (R-CH)
4	Bias Oscillator Select
5	Auto Tape Selector Signal Out (CrO_2)
6	Auto Tape Selector Signal Out (Metal)
7	GROUND
8	B + bias
9	Bias Oscillator (L-CH)
10	Bias Oscillator (R-CH)
11	Playback Signal In (R-CH)
12	B – bias
13	Playback Signal In (L-CH)
14	B + bias
15	DOLBY En/Dc Signal

9 HEAD REPEATING CIRCUIT BOARD

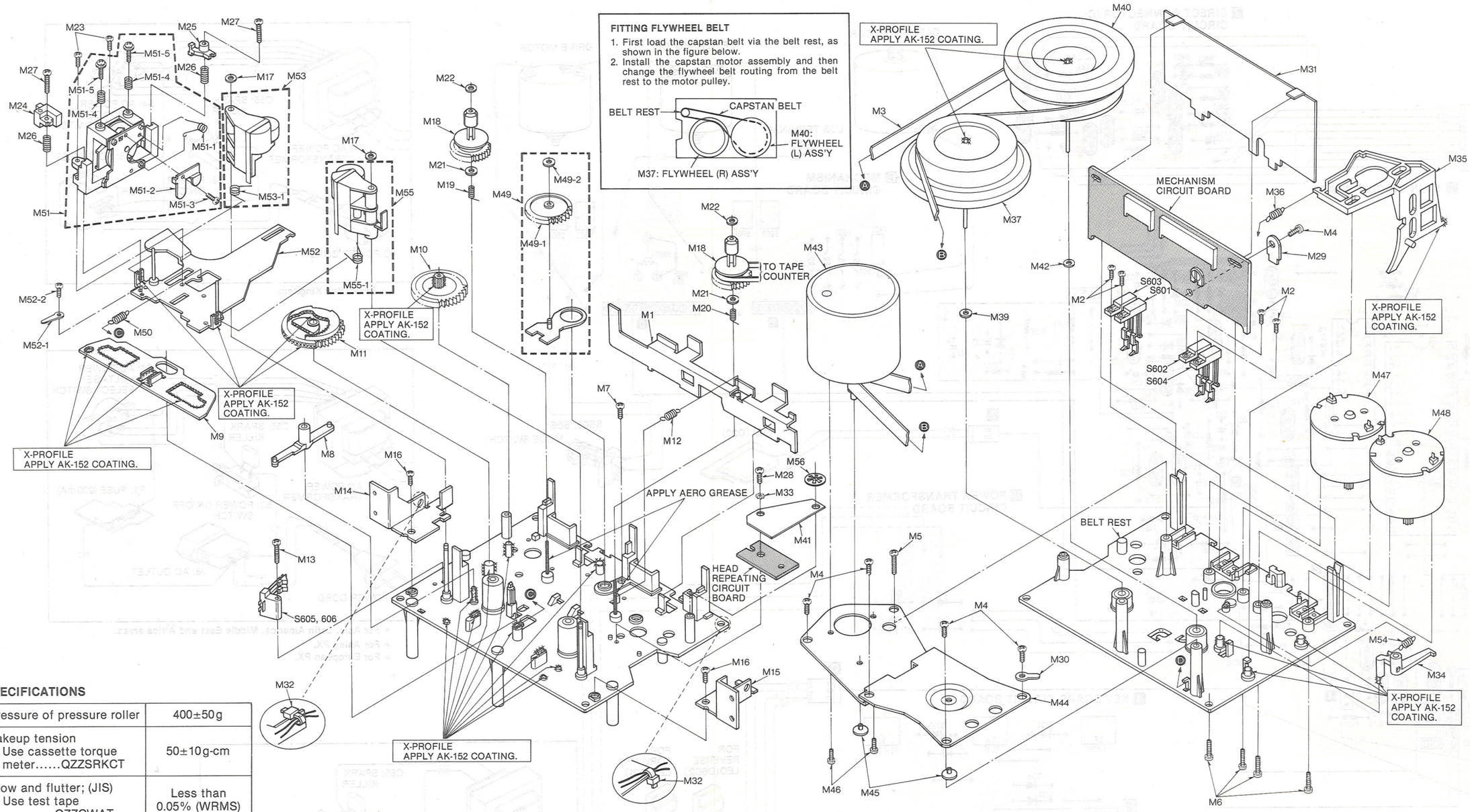


ROTARY HEAD ASS'Y (RECORD/PLAYBACK HEAD)

CONNECTOR X

1	dbx SIGNAL OUT (L-CH)
2	B – bias
3	dbx SIGNAL OUT (R-CH)
4	B + bias
5	dbx SIGNAL IN
6	GROUND
7	GROUND
8	dbx E/D SIGNAL
9	B + bias
10	PLAYBACK SIGNAL IN (L-CH)
11	RECORD SIGNAL OUT (R-CH)
12	NR ON/OFF SIGNAL
13	RECORD SINGAL IN (L-CH)
14	PLAYBACK SIGNAL IN (L-CH)
15	RECORD/PLAYBACK SELECT

MECHANICAL PARTS LOCATION



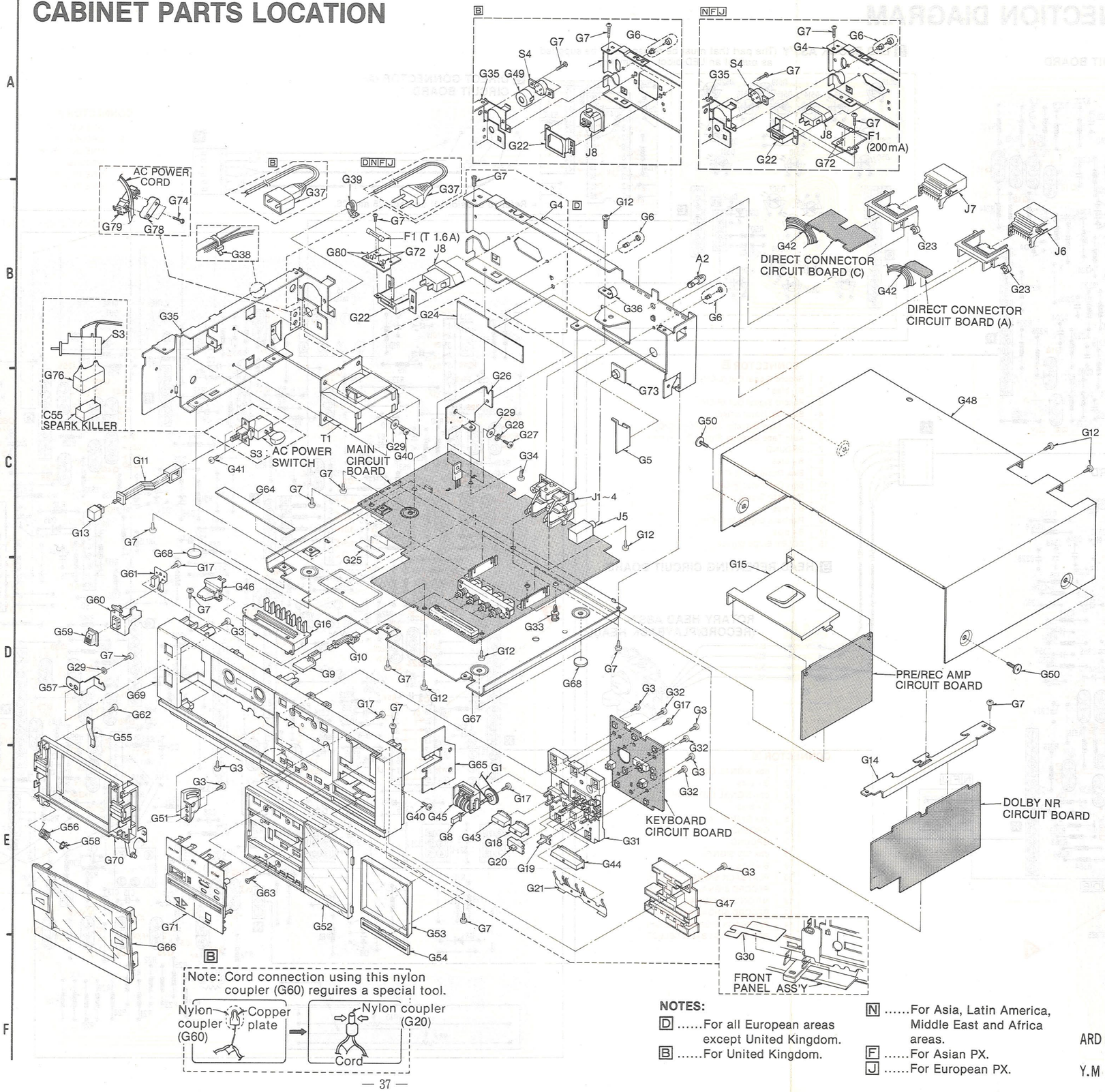
SPECIFICATIONS

Pressure of pressure roller	400±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	50±10g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.05% (WRMS)

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
	MECHANICAL PARTS	
M 1	QMA4620	Eject Angle
M 2	XTN2+8B	Tapping Screw ⊕2×8
M 3	QDB0347	Flywheel Belt
M 4	XTN3+8B	Tapping Screw ⊕3×8
M 5	XTN3+22B	Tapping Screw ⊕3×22
M 6	XSN26+10	Screw ⊕2.6×10
M 7	XTN3+6B	Tapping Screw ⊕3×6
M 8	QML4025	Change Lever
M 9	QMR2096	Change Rod
M 10	QDG1308	Sub Gear
M 11	QDG1309	Main Gear
M 12	QBT2003	Eject Angle Spring
M 13	XTN2+18B	Tapping Screw ⊕2×18
M 14	QMA4628	Mechanism Angle-L
M 15	QMA4627	Mechanism Angle-R
M 16	XTN3+6B	Tapping Screw ⊕3×6
M 17	QBW2046	Washer (3φ)
M 18	QDR1173	Reel Table
M 19	QBC1449	Reel Table Spring-L
M 20	QBC1450	Reel Table Spring-R
M 21	QBW2012	Washer (2.1φ)
M 22	QBW2008	Washer (2φ)
M 23	XTN26+6B	Tapping Screw ⊕2.6×6
M 24	QWY2148Y	Erase Head
M 25	QMG0124	Tape Guide
M 26	QBC1448	Tape Guide Spring
M 27	XSN2+18	Screw ⊕2×18
M 28	XTN26+6B	Tapping Screw ⊕2.6×6
M 29	QBP1998	Earth Spring
M 30	QJT0015	Lug Terminal
M 31	QTW1342	Insulator Sheet
M 32	QTD1315	Cord Clamper
M 33	XWC26B	Washer (2.6φ)
M 34	QML4026	Stop Lever
M 35	QMR2097	Eject Rod
M 36	QBT1947	Head Release Spring
M 37	QXF0221	Flywheel (R) Assembly
M 39	QBW2116	Washer (2.4φ)
M 40	QXF0220	Flywheel (L) Assembly
M 41	QTW1368	Cover Sheet
M 42	QBW2117	Washer (2.7φ)
M 43	QXU0331	Capstan Motor Assembly
M 44	QMA4619	Flywheel Retainer
M 45	QMZ1306	Flywheel Thrust Retainer
M 46	XSN26+3	Screw ⊕2.6×3
M 47	QXU0332	FF/REW Motor Assembly
M 48	QXU0333	Drive Motor Assembly
M 49	QXG1076	Center Gear Assembly
M 49-1	QDG1307	Center Gear
M 49-2	QBW2007	Washer (2.5φ)
M 50	QBT1742	Head Base Plate Spring
M 51	QXV0182	Rotary Head Assembly (Record/Playback Head)
M 51-1	QBN1994	Click Spring
M 51-2	QBP1993	Head Slide Spring
M 51-3	XTN2+4B	Screw ⊕2×4
M 51-4	QBC1422	Head Spring
M 51-5	QHQ1352	Screw
M 52	QXK2764	Head Base Plate Assembly
M 52-1	QTD1258	Lug Terminal
M 52-2	XTN2+4B	Tapping Screw ⊕2×4
M 53	QXL1654	Pressure Roller Arm (L) Assembly
M 53-1	QBN1992	Pressure Roller Spring (L)
M 54	QBT1962	Stop Lever Spring
M 55	QXL1655	Pressure Roller Arm (R) Assembly
M 55-1	QBN1993	Pressure Roller Spring (R)
M 56	QBW0048	Washer

CABINET PARTS LOCATION



NOTES:

- D .....For all European areas except United Kingdom.
- B .....For United Kingdom.
- N .....For Asia, Latin America, Middle East and Africa areas.
- F .....For Asian PX.
- J .....For European PX.

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
		CABINET PARTS
G 1	QDB0220	Counter Belt
G 2 [B]	⚠ QJT1079	Nylon Coupler
	[For United Kingdom.]	
G 3	XTN3+12B	Tapping Screw ⊕3×12
G 4 [D]	QMK2075	Back Chassis
	[For all European areas except United Kingdom.]	
[B]	QMK2076	Back Chassis
	[For United Kingdom.]	
[NFJ]	QMK2077	Back Chassis
	[For PX. For Asia, Latin America, Middle East and Africa areas.]	
G 5	QMA4638	Connector Holding Angle
G 6	QKJ0609	Nylon Rivet
G 7	XTN3+8B	Tapping Screw ⊕3×8
G 8	QGO2250	Counter Button
G 9	QGO2245	Push Botton
G 10	QMR2100	Switch Rod
G 11	QMR2099	Power Rod
G 12	XTB3+12BFZ	Tapping Screw ⊕3×12
G 13	QGO2243	Push Button (Power ON/OFF)
G 14	QMA4631	P.C.B Holding Angle
G 15	QMA4632	P.C.B Angle
G 16	QGG0222	Slide Guide
G 17	XTN26+8B	Tapping Screw ⊕2.6×8
G 18	QGO2247	Push Button (REC MUTE)
G 19	QGO2244	Push Button (Music Select/Blank Skip/Music Repeat)
G 20	QGO2249	Push Button (Timer)
G 21	QBP1997	Push Button Pressure Spring
G 22		
[DNFJ]	QMA4663	AC Outlet Angle
	[For PX. For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]	
[B]	QMA4664	AC Outlet Angle
	[For United Kingdom.]	
G 23	SHR9631	Direct Connector Holding Plate
G 24	QTW1354	Insulator (B)
G 25	QBM1335	Cushion
G 26	QTH1181	Heat Sink
G 27	XSN3+8S	Screw ⊕3×8
G 28	XWA3G	Washer 3φ
G 29	XWG3	Washer 3φ
G 30	QTS1612	Head Shield Sheet
G 31	QMK2094	Operation Chassis
G 32	XTN26+8BFZ	Tapping Screw ⊕2.6×8
G 33	QKJ0608	Tapping Support
G 34	XSN3+6BVS	Screw ⊕3×6
G 35	QMA4629	Side Angle
G 36	RME143Z	Cord Clamper
G 37		
[DNFJ]	⚠ SJA151	AC Power Cord
	[For PX. For all European areas except United Kingdom, Asia, Latin America, Middle East and Africa areas.]	
[B]	⚠ SJA1491	AC Power Cord
	[For United Kingdom.]	
G 38	QTD1315	Cord Clamper
G 39	QBJ1425	Cord Bushing
G 40	XTN3+6B	Tapping Screw ⊕3×6
G 41	XTN3+5B	Tapping Screw ⊕3×5
G 42	QTD1181	Wire Clamper
G 43	QXB0790	Push Button (Record)
G 44	QXB0791	Push Button (Pause)
G 45	QDC0162	Counter
G 46	QYT0665	Slide Knob Assembly
G 47	QVDLX020	LED Block Assembly
G 48	QGC1241	Case Cover
	"Silver Type"	
	QGC1241K	Case Cover
	"Black Type"	
G 49 [B]	QTWM0026	Rotary Switch Cover
	[For United Kingdom.]	
G 50	QHQ1349	Ornament Screw
	"Silver Type"	
	QHQ1349K	Ornament Screw
	"Black Type"	
G 51	QYF0627	Damper Gear Holding Angle
G 52	QGR0195D	Display Panel (A)
	"Silver Type"	
	QGR0195K	Display Panel (A)
	"Black Type"	
G 53	QGR0196S	Display Panel (B)
	"Silver Type"	
	QGR0196Y	Display Panel (B)
	"Black Type"	
G 54	QGG0220	Button Guide
G 55	QBP1946	Cassette Pressure Spring
G 56	QBN2007	Holder Spring
G 57	QMA4626	Holder Angle (L)
G 58	XUBQ4FT	Stop Ring
G 59	QGO2242	Push Button (for Eject)
G 60	QML4030	Eject Lever
G 61	QBP1995	Eject Spring (B)
G 62	XTN26+5BFZ	Screw ⊕2.6×5
G 63	XTS26+8B	Tapping Screw ⊕2.6×8
G 64	QTW1343	Insulator Sheet
G 65	QMA4630	Side Angle (R)
G 66 [DB]	QYF0636	Cassette Lid Assembly
	"Silver Type"	
	[For all European areas.]	
[DB]	QYF0635O	Cassette Lid Assembly
	"Black Type"	
	[For all European areas.]	
[NFJ]	QYF0682	Cassette Lid Assembly
	"Silver Type"	
	[For PX. For Asia, Latin America, Middle East and Africa areas.]	
[NFJ]	QYF0682O	Cassette Lid Assembly
	"Black Type"	
	[For PX. For Asia, Latin America, Middle East and Africa areas.]	
G 67	QYB0431	Bottom Cover Assembly
G 68	QKA1094	Case Foot
G 69	QYP1192D	Front Panel Assembly
	"Silver Type"	
	QYP1192K	Front Panel Assembly
	"Black Type"	
G 69-1	(refer to D20)	
G 70	QYF0659	Cassette Holder Assembly
G 71	QYK0163	Operation Plate Assembly
G 72		
[D]	⚠ QTF1054	Fuse Holder
	[For all European areas except United Kingdom.]	
[NFJ]	⚠ QTF1060	Fuse Holder
	[For PX. For Asia, Latin America, Middle East and Africa areas.]	
G 73	QKJ0667	MIC Jack Holding Plate
G 74	XTN3+20B	Tapping Screw ⊕3×20
G 76	QTW1195	Speark Killer Cover
G 78	QTD1164	Cord Bushing
G 79	QTD1322	Cord Clamper
G 80	⚠ SJT777	Pin Terminal
		ACCESSORIES
A 1 [DBN]	QQT3511	Instruction Book
	[For all European areas, Asia, Latin America, Middle East and Africa areas]	
[FJ]	QQT3519	Instruction Book
	[For PX.]	
A 2	SHE135	Fixing Pin
	"Silver Type"	
	SHE135-1	Fixing Pin
	"Black Type"	
		PACKINGS
P 1 [DB]	QPN4478	Inside Carton
	[For all European areas.]	
[FJ]	QPN4488	Inside Carton
	[For PX.]	
[N]	QPN4487	Inside Carton
	[For Asia, Latin America, Middle East and Africa areas.]	
P 2	QPA0729	Cushion
P 3	QPA0730	Cushion
P 4	QPS0673	Pad
P 5	XZB40X50A02	Poly Bag
P 6	QPC0072	Poly Sheet

ARD
Y.M
D DK B BK N NK F FK J JK

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